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# Report on **Fundamental Reform of the ALBERTA AUTOMOBILE INSURANCE COMPENSATION SYSTEM**

September 2020

by the Automobile Insurance Advisory Committee
for the Minister of Finance of the Government of Alberta

**The Honourable Travis Toews**
President of Treasury Board and Minister of Finance
208 Legislature Building
Edmonton, Alberta
T5K 2B6

Honourable Sir:

With this letter, the Automobile Insurance Advisory Committee transmits its report on Fundamental Reform of the Alberta Automobile Insurance Compensation System.

Chris Daniel, Chair

Shelley L. Miller, Q.C.

Dr. Larry Ohlhauser, M.D.

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# I Executive Summary

On December 18, 2019 the Honourable Travis Toews, President of Treasury Board and Minister of Finance, announced the appointment of an expert advisory committee to explore options to reform Alberta's automobile insurance system. The Automobile Insurance Advisory Committee (Committee) was comprised of consumer and insurance industry expert Chris Daniel, as Chair, legal expert Shelley Miller, Q.C., and medical expert Dr. Larry Ohlhauser.

The Committee's mandate is set out below:

- Develop and provide recommendations for Alberta's automobile insurance systems that are based on the following guiding principles:
  - i. a private sector delivery model for automobile insurance;
  - ii. fair accessible and affordable insurance for Albertans;
  - iii. timely and appropriate outcomes when claims are made; and
  - iv. a viable and sustainable automobile insurance system.
- The goals a fundamental reform would need to achieve include:
  - i. a private sector delivery model;
  - ii. appropriate medical benefits for Albertans injured in automobile collisions;
  - iii. easier access to income replacement benefits;
  - iv. requiring insurers to be responsive to the treatment, care and compensation needs of their customers, and accountable for their claims related decisions and practices;
  - v. to significantly reduce or eliminate costs from the system;
  - vi. to stabilize and potentially decrease automobile insurance rates; making them more affordable for Albertans in the long term; and
  - vii. to return the automobile insurance industry to long-term competitive sustainability.

At the outset of its investigation, the Committee delineated two categories of persons who will be affected. The first consists of the traffic injured, and the Alberta motorists who collectively pay for the losses of the traffic injured, as well as the fees, expenses and costs of various service providers.

The second consists of service providers who perform roles in the existing system, including insurance, health care and legal professionals, insurance brokers and agents, auto insurance regulators, suppliers and the legislators. However, as worthy as their interests and perspectives may be, the Committee recognized that these participants are not a genuine part of the motor accident compensation stake holding arrangement.

The only true fundamental stakeholders in this arrangement, the traffic injured and motoring public, are not in it by complete freedom of choice. Any Alberta motorist who wishes or needs to operate a motor vehicle in the province must purchase and maintain valid automobile insurance because the law has declared it mandatory to do so. The traffic injured are also not in the stakeholder arrangement by choice since no reasonable Albertan would seek to be injured in a motor vehicle accident.

It was important to reflect on the requirements and interests of these true stakeholders, separate and apart from the service providers who represent them. The Committee recognized it was also important to weigh and balance all the views presented, including those

of the service providers in the context of what reforms are required for the benefit of the two true stakeholders.

The Committee's paramount goal was to identify improvements so that Alberta traffic injured can more quickly get their lives back on track and so that Alberta motorists better understand where their premium dollars are applied in the compensation system, what factors affect the cost of automobile insurance and what factors will best achieve long-term premium stability so that they can expect in future to secure auto insurance that is more affordable, more available and less volatile in pricing increases.

The Committee found convincing evidence that:

a. since 1988 the cause of high automobile insurance premiums was ever increasing bodily injury loss costs, more specifically, the component of non-pecuniary general damage awards for pain and suffering and loss of amenities of life that resulted from the tort system litigation process;
b. since there was nothing in the system to control those increases, premiums would continue to rise over the long term and create an even more serious pricing problem;
c. some traffic injured were overcompensated while others were undercompensated;
d. between 2000 and 2019 additional scientific evidence continued to emerge in various jurisdictions in Canada and elsewhere to show that traffic accident health outcomes were improved where tort systems, with their characteristic features of delay, conflict, and the retention of dueling experts, were eliminated from auto insurance compensation systems and replaced with no-fault alternative models; and
e. the scientific evidence further showed that under tort systems, or hybrid tort systems, there was often found health services provided to traffic injured that were either incorrect, duplicative or ineffective, with the result that the health outcomes of traffic injured were further hindered.

In the face of these two consequences, undesirable from the perspectives of traffic injured and insured motorists alike, the Committee conducted extensive study of the history of auto insurance reform from 1946 to the present, from across Canada and elsewhere, and in Alberta from 1988 to the present to determine why this paradox has endured. The Committee found that in Alberta while there had been clear evidence of the first consequence since 1990, the developing scientific evidence of the second consequence over the last two decades has not received widespread recognition.

The Government of Alberta has undertaken auto insurance compensation reform on one occasion between 1990 and the present. In 2003 it elected to proceed with a modest tort reform to restrict recovery of non-pecuniary general damage awards for soft tissue injuries (the *Minor Injury Regulation*). It also enacted a health treatment reform (the *Diagnostic and Treatment Protocol Regulation*). These regulations impacted the traffic injured. It also enacted a regulation establishing a Grid to correct a problem of unaffordability of auto insurance premiums for young and new drivers.

The *Diagnostic and Treatment Protocol Regulation* (DTPR) was devised with the recognition that early access, appropriate diagnosis and effective treatment and early recognition of individuals who had alerting prognostic factors likely to give rise to chronic problems would improve treatment solutions and traffic accident health outcomes.

The Committee found that the scope of the *Minor Injury Regulation* was restricted from its original intent during the design process with the result that it would have a lesser effect in reducing non-pecuniary general damage awards and in turn the extent of savings it would deliver to the cost of automobile insurance.

The Committee found the DTPR also did not achieve its full potential between 2004 and the present due in part to the incomplete compliance with its requirements by health practitioners, incomplete supervision and oversight and the effects of the tort litigation processes that resulted in delay, duplication of health treatments and assessments and disincentive to recovery.

While additional amendments were made by government between 2004 and 2019 to mitigate the effect of court decisions impacting bodily injury loss costs, premium increases were the consequence. In short, the reforms to the auto insurance compensation system in Alberta from 2004 to the present did not produce long-term sustainability, affordability or accessibility in respect of auto insurance premiums.

The Committee reviewed the history of automobile insurance reform across the Canadian provinces and in the Australian state of New South Wales. One common thread found was that the cause of high automobile insurance premiums was ever increasing bodily injury loss costs, more specifically, the component of non-pecuniary general damage awards for pain and suffering and loss of amenities of life that resulted from the tort system litigation process.

Some Canadian provinces responded to loss cost inflation by eliminating the tort component of the automobile insurance system altogether and replacing the rights of recovery with a comprehensive care and income replacement system. This system is commonly referred to as no-fault benefits because the benefits are provided without the requirement to prove fault or otherwise have the economic and non-economic losses measured by the litigation process. Those jurisdictions then experienced stability in automobile insurance premium levels and consistency in delivery of health care benefits to traffic injured.

The jurisdictions that endeavored to preserve the tort component by rebalancing with differing degrees of no-fault benefits experienced only temporary periods of stability. The history of automobile insurance reform in Alberta reflected this same trend. The Committee found convincing evidence that the lack of long-term success in stabilizing premiums was due to uncontrolled increases in non-pecuniary general damage awards as well as the growing costs of legal or health service providers.

The Committee next examined judicial decisions in terms of constitutional authority of the province and legal commentary on the implications of automobile insurance reform in light of the *Canadian Charter of Rights and Freedoms*, ss. 1, 7, 15. The Committee took guidance from a decision of the Alberta Court of Appeal which pronounced that where full costs of care are awarded, damages for pain and suffering can be moderated by policy considerations, for example, workers' compensation regimes which limit or replace non-pecuniary damages.

The Committee next examined relevant scientific health studies which evaluated health outcomes when traffic injury models converted to no-fault compensation systems. These studies produced consistent, compelling evidence that restricting or eliminating the tort component in auto insurance compensation

models, together with a greater emphasis on evidence informed diagnosis and treatment, produces statistically better health outcomes.

The Committee considered actuarial evidence including various closed claims studies undertaken in Alberta between 1988 and 2019, which demonstrated statistically that automobile insurance rates have consistently increased over nearly two decades, as predicted by the AAIB in 1991. These increases have been consistently well in excess of Consumer Price Index increases.

The Committee received input from the public, including service providers and members of the Alberta motoring public by way of public surveys, written submissions and consultations with service providers.

The Committee also took into consideration its individual members' decades of experience with various aspects of the automobile insurance compensation system including experience with its rating boards, with personal injury litigation, with accident injury compensation, with medical and health treatment and diagnostic and treatment protocols, with tort reforms, with insurers and insurance intermediaries and academics.

The Committee concluded on the evidence it evaluated that the Alberta tort system has lost the ability to best serve the traffic injured and motoring public. The Committee concluded the optimal and only solution to produce long-term stability to auto insurance pricing is replacement of the existing hybid tort/no-fault model with a pure no-fault traffic accident care and compensation model.

The parallel solution to produce the best outcomes for traffic injured is a comprehensive evidence informed care model that builds on the DTPR implemented in 2003.

A pure no-fault model can rebalance the goals of traffic compensation resulting in fair, accessible and affordable insurance, timely and appropriate outcomes when claims are made, and a viable and sustainable automobile insurance system with modernized assessment and treatment protocols for all traffic injured. A pure no-fault system will produce greater opportunities to deliver improved health and benefits.

Improved health benefits delivered to all traffic injured will benefit families and dependants of the traffic injured as well as the motoring public and Alberta taxpayers. Better health outcomes would likely reduce the duration of recovery times, which in turn would result in earlier return to work and life activities and lower the nature and amounts of claims for pecuniary losses.

A redesigned pure no-fault accident compensation model will enable and incentivize health providers to develop consistent assessment and treatment protocols and collect patient feedback and objective treatment data to continue to inform those protocols. In the result the redesign will produce opportunities to deliver superior health outcomes for traffic injured and without the delays, duplications in services, adversarial processes and costs that exist under the current model.

The design of a health care model that provides appropriate medical evaluation, assessment and treatment modalities for those traffic injured who may have permanent incapacity and long term care needs is a complex task. It is better addressed by transforming the health care model so that medical, health and vocational expertise currently utilized in the tort system can be redirected to an administrative model that eliminates the features of adversity, conflict and dispute for better care, efficiency and cost.

A pure no-fault auto insurance compensation model will promote innovation and encouragement of optimal health treatment for Alberta traffic injured in an environment devoid of legislated adversarial conduct. Traffic injured, like all persons who suffer ill health, are better served if all their service providers are pulling in the same direction. This collaborative approach induces the injured to also take an active participatory role in their own recovery.

The Committee recommends a redesigned continuum of care model that establishes a new paradigm that will encourage collaboration, innovation and continuing improvement among service providers based on evaluation of performance, health outcomes and research. It combines the most useful features of existing health care treatment regimes with views of subject matter experts as to expansion to apply to all Alberta traffic injured.

The proposed continuum of care model will address the deficiencies identified in the current system, namely delay, conflict, inappropriate and ineffective treatment and duplications in service. It will reallocate resources to produce better health outcomes for all, not merely a portion of all traffic injured in Alberta.

The continuum of care model will provide more rational individualized diagnosis and treatment of Alberta traffic injured. In turn it will encourage the collaborative pursuit of optimal health outcomes among the health service providers, insurers, traffic accident regulators and the traffic injured themselves.

The continuum of care model contemplates a specialized pure no-fault long-term care program for catastrophically injured that will ensure individually designed treatment, rehabilitation and care over the life of the individual on the basis of best evidence informed protocols. To function in a private enterprise system, the Committee proposes the creation of a pool of funds contributed by a specified portion of every auto insurance policy premium, managed by an entity similar to the Facility Association. Where efficiencies can be achieved with improved protocols and provided it is always fully funded according to prudent actuarial calculations, premiums may be reduced or rebated.

In order to provide reasonable care to all traffic injured, the pure no-fault compensation model recasts the concept of compensation for pain and suffering and loss of enjoyment of life. For traffic injured who suffer a temporary non-permanent injury, in addition to the treatment to be provided under the care protocols, our proposed Model I provides a fund of money referred to as a rehabilitation maintenance account .

For the most serious injury cases that involve the most pronounced consequences of pain and suffering and loss of enjoyment of life, there is provision for an impairment benefit that will be specifically tailored to the circumstances of the individual case and will stand in place of the former court award for pain and suffering and loss of enjoyment of life.

In the case of the catastrophically injured person, the intent of the model is to provide proper compensation that will approximately replicate the amount of the lump sum award pronounced in the SCC Trilogy of cases, but in a different form and application.

The new model will extend to all traffic injured including those at fault. The Committee's expectation is that upon elimination of current costs that did not improve health outcomes, the reduction and elimination of certain lump sum payments for pain and suffering, the implementation, management and oversight of superior evidence informed protocols and

health provider practices, the model will deliver first, much improved health outcomes. In the medium and long term, where the pure no-fault model achieves maximum performance, it will deliver reductions in the cost of medical treatment and the amounts of income compensation required. Reduced stabilized costs will result in sustainable, predictable and stabilized premium levels over the long term.

This trend will be achieved through the maximum effort of all participants to deliver optimal performance which will be verified by collecting and examining all the relevant data and the use of modern technology including artificial intelligence and applying medical innovations.

Transferring the Alberta traffic injury compensation mechanism to an administrative body that oversees individual assessment of all traffic injured and provides well informed treatment individually will also provide a healthy environment for its health services providers.

The Government of Alberta retains the ultimate statutory and regulatory authority over the reformed auto insurance compensation model. A reformed traffic accident administrative regulatory structure would continue to owe a reporting obligation to government including responding to government requests and keeping it apprised of changing circumstances that required input and direction.

The Committee recommends the creation of a Traffic Injury Regulator, including a Board and Tribunal to oversee four arms of accident care and compensation: one of which will provide accident claims administration and support to help claimants advance claims for health treatment, benefits and economic losses. A second arm will be composed of certified and qualified medical experts to provide conclusive determinations of injured persons' extent of recovery and impairments. The medical panel process under the Alberta workers' compensation system is a useful example. A third arm will consist of claims assessment panels comprised of financial and vocational experts to provide conclusive determinations of income replacement for traffic injured.

The Committee recommends the current Automobile Insurance Rate Board (AIRB) be reconstituted to form a fourth arm to the Traffic Accident Board. There should be commensurate changes to the authority of the AIRB and some communication procedures by which the outcomes of the Traffic Injury panels and Tribunal can be periodically transmitted to the AIRB to inform its rate-approval responsibilities.

Each arm will have resort to the Traffic Accident Board for advice and direction and the claimants will have recourse to the Traffic Injury Tribunal for review or appeal in respect of the conclusive certificates issued.

The Committee concluded that these regulatory arms should be independent of both government and the auto insurance industry, however should be funded by the auto insurers who write business in Alberta, according to their proportionate share of the market, with some financial contribution also from the Government of Alberta, to take into account the savings it will incur due to elimination of administrative costs pertaining to court, health and rating process.

The Committee recommends that more expanded collaborative dialogue be undertaken among the auto insurance industry, health providers, claims providers, proposed injury navigators and government officials prior to and in the implementation phase before a final design is adopted. Collaborations among these providers could have long-term advantages in providing reliable information for insurers

to improve their array of optional programs and in turn those could inform improvements to the services delivered as regards the mandatory product.

With proportionate joint financial support the public can be assured of independence in the conversion to a regulatory process and optimal selection of subject matter experts who will oversee the claims processes, make the medical and financial determinations and rating and other market practices on the basis of objective and transparent predetermined qualification for the roles and appetite to participate.

The report of the consulting actuary demonstrated that under the Committee's proposed Model I, the pure-no fault compensation system would be expected to produce a 9.4% reduction in auto insurance premiums for the majority of consumers who purchase the full package of insurance which would include third party liability, accident benefits, uninsured and underinsured motorist, collision and comprehensive coverages. The Committee observes that if the auto insurers were able to deliver on the expected reduction in cost of overhead, by reason of the creation of the Traffic Accident Regulator, the 9.4% reduction might well deliver as much as 10%.

For those consumers who desire and require more extensive coverage for their potential medical health and financial losses after a traffic injury, the optional products the insurance industry has committed to make available should allow for a wide array of choice for consumers to tailor to their individual needs.

The Committee expects that once the operation of the model delivers the maximum expected improved health outcomes the premium reduction will remain stable in the medium term, i.e. three years, and should thereafter rise no faster than the Consumer Price Index increase in the long term.

The Automobile Insurance Advisory Committee submits its conclusions and recommendations in line with the guiding principles and desired goals outlined in its Mandate for achievement through a fundamental reform of automobile insurance compensation in Alberta.

The discussion, analysis and conclusions which follow are offered on the basis of a detailed review of the relevant judicial authorities. No members of the Committee are active members of the Law Society of Alberta, nor were any consulted in connection with this section. The Minister of Finance is cautioned to consult his own legal advisors for professional legal advice, if required.

# II Summary of Conclusions and Recommendations

# A. Conclusions

## Automobile Insurance Reform

### A. Analysis of Alternative Legislative Models

1. The historical review and evaluation of numerous commissioned reports over decades and across many Canadian provinces provided compelling evidence that reformed traffic accident compensation models which retain tort features result in continuing premium instability in the medium and long term.

2. It was evident to the Committee that in a reformed auto insurance model tort finds opportunities to grow and thrive. Two recent examples illustrate this phenomenon. The New South Wales model, redesigned in 1999 to minimize tort components, fell prey to pricing problems and bodily injury cost increases within 14 years. In short, the tort components found areas for regrowth. The Ontario experience was the same or similar, despite its intent to minimize tort with a high litigation threshold and enhanced accident benefits. Over time, tort components replicated with increasing litigation on the accident benefit side combined with duplication and increased service provider costs generated by legal and health professionals.

3. More importantly, since the conversion of some systems to full no-fault compensation, emerging scientific data has produced equally compelling evidence that tort models impede health outcomes and recovery of traffic injured.

4. The Committee was satisfied on the evidence of its detailed historical analysis of auto insurance reform experience that preserving any component of tort in a reformed automobile insurance system is inconsistent with the needs of traffic injured. Further, since it adds unnecessary expense to policy holders, it also adversely affects the motorists who pay for automobile insurance.

5. The Committee concluded from its analysis that there should be a transformation from the current model and its primary tort principle of money compensation for non-pecuniary damages to a pure no-fault model based on better, more timely rehabilitation and health outcomes and the replacement of court determination of the measure of traffic accident pecuniary losses through a collaborative administrative panel-based process. The current model of accident compensation should be reformed to expedite health outcomes and recovery to all traffic injured, including those who cannot prove fault of another driver.

6. The Committee concluded that to attain both optimal health treatment for all of its traffic injured and predictable, stable insurance premiums for road users, the Alberta motoring public would be best served in the medium and long term by the implementation of a pure no-fault system of automobile insurance designed with evidence-informed medical diagnostic and treatment protocols, and non-adversarial claims processes and assessments.

### B. Analysis of Alberta Auto Insurance Reforms

7. From the analysis of the history of Alberta automobile insurance reform when compared to other similar hybrid tort models, the Committee drew the following lessons for Alberta:

   a. the various experiments undertaken by hybrid tort/no-fault auto insurance models from 1990 to 2017 in Canadian provinces and elsewhere when compared to pure no-fault models clearly show that the pure no-fault models have performed more effectively in terms of premium stability;

   b. those jurisdictions that endeavored to balance both tort and no-fault accident benefit components in one traffic accident compensation model were unsuccessful in delivering affordability, accessibility, and stability in premiums in the medium and long term;

   c. auto insurance reform models that preserve a tort component or tort components have been criticized for the adverse effects upon the health outcomes of traffic injured;

   d. pure no-fault models reduce recovery times, enhance health outcomes, expedite claims resolution for the benefit of the traffic injured and reduce premium costs for the benefit of insured motorists;

   e. a legislature contemplating a fundamental reform of its automobile insurance system should recognize that a broad consensus among all constituents, including both the traffic injured and the policy holders and service providers, is unlikely to be achieved; and

   f. a legislature which undertakes a fundamental reform of its automobile insurance system should expect to receive some initial opposition from various sectors of the public because such a transformation will be disruptive to certain service providers whose roles will be transformed, diminished or eliminated altogether.

## Proposed Reform of the Alberta Automobile Insurance Compensation System

8. Increases to auto insurance premiums for insured Alberta motorists have continuously exceeded the Consumer Price Index increases for the past 3 decades, and have been sharply escalating since 2014. The current Alberta auto insurance compensation model does not deliver stability of premiums or long-term sustainability.

9. There are serious systemic problems in the current Alberta model. These are exacerbated by entrenched practices and processes that have not kept pace with the health needs of the traffic injured but have in fact prevented or delayed the introduction of modern innovations to improve health outcomes for the traffic injured and to prevent worsening of traffic injuries due to delays in claims resolution.

10. All Albertans, including those who do not form part of the insured motoring public, will be better served if the automobile insurance system provides at least a modicum of evidence-informed medical and health treatment to help all traffic injured receive proper care, participate optimally in their own recovery and see an expedited return to normal life activities including employment and leisure.

11. The Committee concluded that growing divergence between the intent and the result of the 2004 reforms is detrimental to the traffic injured and the motoring public, as is ongoing uncertainty flowing therefrom.

12. The Committee concluded that an alternative administrative health delivery model outside the tort system can provide individual evaluation of each injured person's injuries and losses, and can do so more effectively, more swiftly and with superior health outcomes for traffic injured than the current model.

13. The principle of deterrence is no longer a convincing justification for maintaining the tort system in auto insurance. Deterrence of risky driving is more effectively achieved with increased enforcement of traffic laws, increased penalties for traffic infractions, more extensive education about the consequences of risky driving and the pricing mechanism that requires reckless drivers to pay higher premiums for insurance, if they are not precluded altogether from driving due to traffic enforcement laws.

14. The long delays endemic in tort litigation could be avoided by substitution of medical review panels established under an administrative model. These would have the authority to make conclusive determination at appropriate milestones after an accident as to issues of medical impairment and future treatment requirements.

15. The requirement for duelling doctors to be engaged by both sides in litigation, to expend large amounts of time, resources and expense to craft written reports and prepare for possible cross-examination on their credentials and credibility is counterproductive. Instead doctors should be enabled to lead the inquiry, collaborate in a non-controversial, non-adversarial environment, and take factors into consideration that in a legal environment may have been excluded for procedural reasons. This will produce a more comprehensible and speedier resolution to the benefit of all participants and will permit final conclusions about the health condition of traffic injured much earlier than typically occurs in the litigation process.

16. The original design of the DTPR remains sound and should be further developed, enhanced in its design and extended to deal with all other injuries. The development and extension of the existing DTPR under a properly designed regulatory process will address the problems of some traffic injured in Alberta receiving inadequate, wrong or duplicative treatment that does not benefit their recovery. Such additional treatment protocols when reviewed, refined, and enforced in line with current evidence-informed practices will establish greater uniformity of treatment, will allow for greater relevant data collection and feedback to inform and track recovery methods that are safe and effective.

17. The Alberta tort system has lost the ability to best serve the traffic injured and motoring public. A pure no-fault model can rebalance the goals of traffic compensation resulting in fair, accessible and affordable insurance, timely and appropriate outcomes when claims are made, and viable and sustainable automobile insurance systems with modernized assessment and treatment protocols for all traffic injured. A pure no-fault system will produce greater opportunities to deliver improved health and benefits.

18. Improved health benefits delivered to all traffic injured will benefit families and dependants of the traffic injured as well as the motoring public and Alberta taxpayers. Better health outcomes would likely reduce the duration of recovery times, which in turn would result in earlier return to work and life activities and lower the nature and amounts of claims for pecuniary losses.

19. A redesigned pure no-fault accident compensation model will enable and incentivize health providers to develop consistent assessment and treatment protocols and collect patient feedback and objective treatment data to continue to inform those protocols. In the result the redesign will produce opportunities to deliver superior health outcomes for traffic injured and without the delays, duplications in services, adversarial processes and costs that exist under the current model.

20. The design of a health care model that provides appropriate medical evaluation, assessment and treatment modalities for all of those traffic injured who may have permanent incapacity and long-term care needs is a complex task. It is better addressed by transforming the health care model so that medical, health and vocational expertise currently utilized in the tort system can be redirected to an administrative model that eliminates the features of adversity, conflict and dispute for better efficiency and cost.

21. A pure no-fault auto insurance compensation model will promote innovation and encouragement of optimal health treatment for Alberta traffic injured in an environment devoid of legislated adversarial conduct. Traffic injured, like all persons who suffer ill health, are better served if all their service providers are pulling in the same direction. This collaborative approach induces the injured to also take an active participatory role in their own recovery.

22. Transferring the Alberta traffic injury compensation to an administrative body that oversees individual assessment of all traffic injured and provides well informed treatment individually will also provide a healthy environment for its health services providers.

## Review of Health Outcomes Evidence

23. The peer-reviewed scientific evidence the Committee examined from evaluations of traffic injured recovery under no-fault compensation models since 2000 prove that health outcomes of traffic injured are improved after elimination of money compensation for pain and suffering.

24. The scientific evidence the Committee examined supports the contention that under a tort system claims are filed in a potentially adversarial environment that can promote the persistence of symptoms in claimants. In the course of proving that their pain is real, claimants may encounter conflicting medical opinions, unsuccessful therapies, and legal advice to focus their suffering or disability by continuous documentation.

25. The evidence the Committee examined suggests a tort system may influence patients' perception of their medical needs and how insurers/tort require them to legitimize their injury and then influence the patients to pressure clinicians for referrals.

26. A study under the tort system the Committee examined confirmed that too much health care too early after a soft tissue injury negatively influences the prognosis of whiplash patients. Early minimal care that promotes activation improves prognosis.

27. The study showed that fewer persons file claims for whiplash injury under the no-fault system, and those who did recovered faster than similar claimants under the tort system. Similar results have been produced in Alberta in respect of recovery periods for mild traumatic brain injury.

28. Scientific data studying long-term outcomes after orthopaedic trauma the Committee examined led to the conclusion that compensation schemes may impede recovery from injury by producing worse outcomes for compensable orthopaedic trauma patients, compared with non-compensable patients.

29. Under both the tort and the no-fault systems, the involvement of a lawyer was associated with delayed claims closure.

30. All of the foregoing medical evidence supports the finding of the trial judge in *Hartling v. Nova Scotia* (Attorney Genera*l), 2009 NSCA 130*, that:

    > Unfortunately, the nature of the tort recovery system which is adversarial requires patients to focus on their pain and disability which is counter to the best methods of treatment which focusses patients on their abilities.

31. Under a no-fault system, there is no financial incentive to delay recovery since claimants have immediate access to medical care and other benefits without being required to substantiate their injuries.

32. The consistently developing medical evidence the Committee examined from 2000 to the present demonstrates that health outcomes of traffic injured are not well served by the tort system and preservation of any of its components in the Alberta automobile insurance compensation system is not justified. This is supported by testimony of health practitioners in the recent court challenges in Alberta and Nova Scotia.

33. Experience from other jurisdictions the Committee examined consistently suggests extended treatment and some investigative procedures, such as imaging and invasive treatment, are not recommended for most soft tissue injuries and can be linked with dependence and poor health outcomes.

34. New South Wales' and Ontario's experience provides further caution that fee for service payment models for treatment of traffic injured tend to support quantity over quality. Overtreatment occurs in compensation systems because sometimes the practitioner is not aware of or committed to best practice guidelines for soft tissue injuries and others are influenced to recommend treatment or extend treatment in response to pressure from patients or their families.

35. A study of patterns of early clinical care involving visits to general practitioners, chiropractors, or specialists did not show that early, aggressive care promotes faster recovery. Whiplash injury is less of a problem in jurisdictions where the involvement of healthcare providers is minimal.

36. In addition to establishing objective evidence that no-fault models are superior to tort models from a health outcome perspective, pure no-fault models have demonstrated the greater opportunity to collect reliable treatment data to inform, innovate and improve treatment modalities to traffic injured.

37. The implementation of the pure no-fault model in Québec enabled the Québec Task Force to utilize the data to establish a classification system for whiplash associated disorders as WAD I, II and III, and this system is now being used worldwide. This experience is strong evidence that a pure no-fault model for accident compensation can not only provide ongoing data to inform consistent, appropriate treatment for various categories of traffic injuries but is also better suited to utilize the data collected to implement innovative techniques to improve treatment more effectively and expeditiously.

38. The New South Wales' experience also supports the importance of collecting and analyzing data on patterns of rehabilitation and recovery to validate approaches that produce optimal health and functional outcomes for soft tissue injured persons. It provides supporting evidence that any reformed medical assessment model must ensure that treatment paths are consistent with established and current evidence-informed practice guidelines to facilitate optimal recovery and containment of treatment costs.

39. The New South Wales' experience also reinforced support for an independent panel of medical specialists who are the sole decision makers about assessment and treatment issues, noting that accessibility to skilled and qualified experts eliminates adversarial elements, such as duelling experts that can result in delay, increased cost and potential impaired recovery.

40. The evidence and experience pertaining to the development and implementation of the Alberta DTPR protocols the Committee examined since 2004 provides reliable validation of the benefits of that innovation and should be used as a foundation in the transformation of treatment of traffic injured in Alberta.

41. The Committee was satisfied that the peer-reviewed health evidence it examined further bolstered its conclusion that a pure no-fault model would be the optimal choice for treatment of Alberta traffic injured.

## Actuarial Evidence from Tort Accident Injury Compensation Systems

42. From the actuarial evidence reviewed, the Committee concluded that since non-pecuniary awards for catastrophic injuries and minor injuries have been capped, whereas the four categories of injuries isolated in the 2019 Cheng Claims and Cost Study (see Sources) were not, claimants in those four categories have been overcompensated relative to the minor and catastrophically injured.

43. The primary cause of high and continuing increases in auto insurance premiums in Alberta and in other tort jurisdictions is that uncapped bodily injury loss costs continually increase and at a rate well in excess of Consumer Price Index increases for other market commodities.

44. Efforts in other tort jurisdictions to provide a solution to the excessive effect of tort on the cost of bodily injury claims have failed despite well considered experiments to preserve and balance both tort and no-fault components, as for example, in Ontario and New South Wales. The actuarial evidence supports the conclusion that the only effective and sure means to secure premium stability and sustainability in the long term is to remove the tort components altogether and to replace them with the best and proven innovations resulting from the pure no-fault models implemented in other jurisdictions.

## Public Consultations

### A. Evidence of Public Consultations 2003

45. The Committee concluded that automobile insurance reform is not a topic on which legislators can expect to secure broad support for the reasons that the subject is examined by so many different persons and groups from different angles, as well as from short, medium and long term perspectives. Previous attempts in Alberta to negotiate auto insurance reform for consensus among groups with vested interests showed that the original goal was diluted through disagreement among constituents, which resulted in half measures and undermined the long-term solutions the reform originally intended.

### B. Results of 2020 Public Surveys

46. The responses to the 2020 public surveys could not be viewed as definitive in informing the Committee's final recommendations, however, it carefully considered the findings of Leger and noted the following most salient features of the responses as follows:

    a. 63% of respondents indicated that they do not feel their premiums are fair and reasonable;
    b. 56% and 64% respectively indicated they would prefer access to affordable insurance rates, as well as immediate to medical/rehabilitation and income replacement over the right to sue for a cash settlement;
    c. 77% of respondents indicated that at-fault drivers should be subject to penalties which could include fines, convictions along with higher insurance rates; and
    d. 42% of respondents indicated their desire to retain their right to sue in the event of a serious permanent injury.

47. Respondents clearly indicated that they considered auto insurance premiums are too high, and greater emphasis should be placed on rewarding good drivers and lowering repair costs.

## C. Submissions from Insurance Industry Service Providers

### Property Damage Product Reform

48. A no-fault model known as Direct Compensation Property Damage (DCPD) would deliver a simpler, faster claims process, improve the communication and service to the insured motorist, enable the insurer to predict future loss costs more accurately and likely result in some reduction in premium costs.

### Reforms to Address Risky Driving Behavior

49. The Government of Alberta (GOA) should increase enforcement and penalties for high-risk driving offences, collect, maintain and disseminate results and data to help further educate consumers about the dangers and consequences of risky driving behavior.

50. The GOA should reform the graduated licencing and other driver training programs, including possible inclusion of retesting of penalized drivers, to build public confidence that such programs can effectively promote safe driving practices.

### Reform of the Regulatory Process

51. As to concerns about the operation of the prior approval process, operation of the Grid, all-comers Rule, Territories, and use of rating factors, resulting in delay and confusion, the Committee concluded that the legislative reforms to the regulatory process in 2004 either are no longer meeting their intended goals or have created new problems, or both.

52. The Committee concluded that one of the reasons for the industry concerns is the overlapping jurisdiction of the AIRB and the Office of the Alberta Superintendent over rating conduct which results in conflicting and reportedly confusing rulings to insurers as well as delays over approvals, which weakens market relevance of the rate applications during the lapse of time.

53. The Committee concluded that the AIRB should take exclusive jurisdiction over all rating issues while the Superintendent should govern insurance solvency, financial reporting and other areas its supervised before the 2004 reforms.

54. AIRB, either as it presently exists or as reconstituted to enlarge its mandate, should re-examine:

    a. the prior approval model and a file and use model with a designed set of principles;
    b. whether to publish guidelines to apprise insurers of what information is appropriate to include in rating applications relative to risk assessment;
    c. the “all comers rule” and the Grid;
    d. previous Facility Association ceding arrangements and oversight of its premiums to ensure adherence to social policy considerations and actuarial evidence;
    e. the current Territories designation;
    f. establishing and publishing a list of prohibited rating factors;

g. remedies for non-compliance with guidelines; and

h. the benefit of retaining a delegate of the Superintendent of Insurance in the rate approval process.

55. The Committee concluded that:

a. reforms in these areas are likely to:

i. minimize or eliminate the need for sudden legislative corrective actions such as rate freezes;

ii. reduce cross subsidization of bad drivers by good drivers;

iii. reflect the driving risk across geographic areas of Alberta; and

iv. assist more drivers to qualify for mandatory insurance.

b. greater transparency, education and timely disclosure to consumers of amounts of the premium which are allocated for premium tax, medical treatment, the Alberta health care levy, cost of physical damage claims and bodily injury claims are likely to enhance the consumers' understanding of the components of the mandatory premium.

### Reform of the *Judgment Interest Act*

56. The *Judgment Interest Act* should be amended to make the rate for non-pecuniary damages the same as the rate for pecuniary claims and to suspend claims for judgment interest on non-pecuniary damages for a period of two years from the date of accident loss as both would reduce the cost of insurance to motorists in a transition period.

### Optional Insurance Products (UBI)

57. Permission to utilize and expand use of user based optional insurance products is a question that should be examined and determined by the AIRB, either as it presently exists or as reconstituted.

### Legislation to mandate use of winter tires

58. The Committee concluded use of winter tires for the winter months in Alberta will reduce the occurrence and frequency of auto accidents and injuries.

### Section B Benefits

59. The Section B Benefits system under the current model had demonstrated many flaws and was not delivering the original goals intended. A fundamental transformation of the current system for compensation for no-fault benefits was required.

## The Tort/No-Fault Issue

60. The list of concerns about the tort features of the current model was extensive. The Committee concluded that since implementing modest and piecemeal reforms which have been demonstrated in other jurisdictions to be ineffective, undertaking one fundamental comprehensive reform on one occasion to all aspects of the current model will best achieve the goals of optimal health outcomes to traffic injured, together with affordability, accessibility and long-term sustainability of auto insurance premiums. Moreover, given that any auto insurance reform is likely to result in dislocation and disruption to many service provider businesses and operations, the Committee concluded that the extent of such adverse consequences will be contained if reform occurs at once, rather than in piecemeal increments over varying time periods.

61. Insurers' preparedness to now design competitive and well-structured optional income replacement coverages can address concerns about incomplete coverage for some traffic injuries. It will allow consumers at the time of renewal of issuance of their auto insurance policy to elect to purchase additional amounts of coverage to ensure compensation for the entirety of their provable income losses.

62. Those optional products should be subject to reasonable oversight by an independent traffic accident regulatory body to ensure fairness to consumers from pricing and coverage perspectives.

63. Under a reformed pure no-fault model, insurers should continue to be subject to oversight delivered by independent regulators with necessary subject matter expertise as regards all aspects of mandatory automobile insurance in Alberta.

## Evidence-Informed Health Treatment for Traffic Injured

64. Other than legal service providers, most participants supported the view that removing or reducing the tort component would lessen the strain of litigation demands on medical and health professionals whose main professional purpose was treating traffic injured.

65. The Committee concluded that under a pure no-fault model there were many opportunities to optimize health treatment for traffic injured. These many opportunities are specifically listed below in our Recommendations.

66. Competent health service providers working collaboratively with the private insurers will have the relevant insight to respond to the requirements of fundamental reform. This is so even weighing facts that the reform will require transformative changes to health services delivery to traffic injured and more comprehensible and responsive oversight and regulation of insurers' conduct regarding their claims, compensation and rating practices.

67. There will be a sufficient appetite among competent health providers and insurers to collaborate in the design and delivery of a fundamental reform of the accident compensation model to eliminate adversarial conduct and unnecessary commercial operations currently existing between the traffic injured and the administrative health delivery and compensation services they require.

### Reforms to the Assessment of Injury and Pecuniary Loss Process

68. Almost all service providers agreed that to be an effective alternative to the current model, the alternative regulatory injury evaluation and compensation regime must exclude conflict, disputation and adversarial features that increase cost, delay and added stresses to the injured claimant and include the service providers who desire to expedite optimal recovery and rehabilitation outcomes for traffic injured.

69. The Committee concluded that the market preparedness to offer a complete suite of optional products to provide first party coverage of those losses previously addressed under the tort model would probably satisfactorily fill any gaps for any traffic injured not fully made whole by the benefits provided in a reformed pure no-fault compensation model.

70. The Committee concluded that a composition of a series of mandatory benefits made available to all traffic injured under a mandatory policy supplemented by a series of optional enriched benefit that a consumer may choose or decline is the superior version of a choice model for motorists and traffic injured.

71. There should be a fully redesigned traffic injury regulatory body populated by independent subject matter experts to establish and maintain optimal health treatment and delivery of services for all traffic injured, for early and appropriate claims assessment.

72. In the transition period, the GOA may wish to establish regulations to limit fees for services for all such litigation support providers, including lawyers, court experts, and mediators to appropriate and transparent levels for so long as any tort component is retained in the accident compensation system.

## Proposed Reform of Health Care Model

73. The Committee concluded that the redesigned continuum of care model outlined in Section X of this Report combines the most useful features of existing health care treatment regimes with views of subject matter experts. It establishes a new paradigm that will encourage collaboration, innovation and continuing improvement among service providers based on evaluation of performance, health outcomes and research.

74. The proposed continuum of care model will address the deficiencies identified in the current system, namely delay, conflict, inappropriate and ineffective treatment and duplications in service. It will reallocate resources to produce better health outcomes for all, not merely a portion of all traffic injured in Alberta.

75. The continuum of care model will provide more rational individualized diagnosis and treatment of Alberta traffic injured. In turn it will encourage the collaborative pursuit of optimal health outcomes among the health service providers, insurers, traffic regulators and the traffic injured themselves.

76. Because the proposed continuum of care model will extend to all traffic injured the Committee expects the elimination of current costs that did not improve health outcomes, the reduction and elimination of certain lump sum payments for pain and suffering, the implementation, management and oversight of superior evidence-informed protocols and health provider practices, will deliver much improved health outcomes. It further expects that over time, this redesign this will reduce the cost of medical treatment and income compensation due to improved health outcomes. Reduced stabilized costs will result in sustainable, predictable and stabilized premium levels over the long term.

77. The Committee concluded that the proposed pure no-fault private enterprise model should trend toward expediting recovery of Type I and Type II injuries, and optimizing treatment and long-term care for Type III injuries, all of which, in turn, should result in reduced medical costs and income claims over time. This trend will be achieved through the maximum effort of all participants to deliver optimal performance which will be verified by collecting and examining all the relevant data and the use of modern technology including artificial intelligence and applying medical innovations.

## Proposed Reform of Auto Insurance Regulatory Regime

78. The Committee has included in its Recommendations extension of the jurisdiction of the AIRB or, alternatively, expanding its mandate under a new reform model. It offers a few additional words of guidance with respect to AIRB's role in future.

79. The Committee observes that the predecessor Alberta Auto Insurance Board was first constituted in approximately 1970 as a statutory body established independent from the GOA. From that date until about 2003, it functioned efficiently in delivery of rate and rate related decisions as a prior approval board.

80. In about 2003, the Alberta Auto Insurance Board was reconstituted as the Alberta Insurance Rate Board and since then reported directly to the Minister of Finance, as a part of the GOA although it has been funded by the automobile insurance industry. While the jurisdiction of the Alberta Insurance Rate Board is similar to that of its predecessor, as reported under Section XI C of this Report, some overlapping jurisdiction has emerged with that of the Alberta Superintendent of Insurance which has resulted in concerns about the efficiency of the operation of both regulators.

81. The Committee concluded that while the current Alberta Insurance Rate Board has worked well under the existing model, the motoring public would be better served if it reverted to its former status, so that it could provide independent expert advice to the GOA from time to time as circumstances dictate, and on a regular basis interact more nimbly and informally with auto insurers, new traffic regulators and other affected parties as regards rate and rate regulating issues.

82. With its existing expert knowledge about the specific operation of prior approval, the Grid, Territories, rating factors that should be permitted and prohibited and new optional products such as UBI, the current board members and staff are in a unique and valuable position to offer advice and guidance in an implementation phase.

## Actuarial Forecast of Impact of Proposed Reforms

83. The report of the consulting actuary demonstrated that under the Committee's proposed Model I, the pure-no fault compensation system would be expected to produce a 9.4% reduction in auto insurance premiums for the majority of consumers who purchase the full package of insurance.

84. For those consumers who desire and require more extensive coverage for their potential medical health and financial losses after a traffic injury, the optional products the insurance industry has committed to make available, should allow for a wide array of choice for consumers to tailor to their individual needs.

85. The Committee observes that if the auto insurers were able to deliver on the expected reduction in cost of overhead, by reason of the creation of the Traffic Accident Regulator, the 9.4% reduction might well deliver as much as 10%.

86. The Committee expects that once the operation of the model delivers the maximum expected improved health outcomes, the premium reduction will remain stable in the medium term, i.e. three years, and should thereafter rise no faster than the Consumer Price Index increase in the long term.

## Legal Considerations

87. Although no one can ever predict whether a legal challenge will be made following an auto insurance law reform, the prevailing judicial authority has clearly established that pure no-fault auto insurance regimes, like those that have been in force in Manitoba and Québec, are within the scope of provincial legislative authority and since they treat every member of the driving public equally, a challenge under the Charter would be without merit.

88. The decision of the Alberta Court of Appeal in *Morrow v Zhang* has satisfied the Committee that a Charter challenge to a future auto insurance reform would be untenable provided that, like the 2003 reform, it is developed and implemented as a package, balanced, interrelated and interdependent.

89. In summary, the Committee concludes Alberta's existing auto insurance system should be replaced with a pure no-fault accident compensation model with features described below.

# B. Recommendations

## Evidence-Informed Health Treatment for Traffic Injured

1. The Committee recommends removing the tort component to lessen the strain of litigation demands on medical and health professionals whose main professional purpose was treating traffic injured and replacement with a pure no-fault model under which enhanced care programs should be developed for all categories of injuries including psychological, chronic pain, and combinations and clusters of accident injuries.

2. The Committee recommends a fundamental reform to the delivery of health care to all traffic injured under a pure no-fault model to include as far as possible the following features:

   a. supporting early, active, and appropriate evidence-informed treatment aligned with and for traffic injuries;

   b. pre-approved treatment frameworks for common injuries based on evidence-informed care with associated schedules and policy limits;

   c. expedited access to care from prescribed providers;

   d. reducing transactional administrative burdens in the system;

   e. reducing duplication of services and overutilization;

   f. optimizing appropriate treatment modalities with consistent quality improvement to achieve recovery timeframe of 2 to 3 years for most injuries;

   g. codifying causation so that there can be reasonable finality of injury claims and proper evaluation of the injuries caused or contributed to by the traffic accident as distinct from other causes; and

   h. establishing:

      i. definitions of serious and catastrophic injuries;

      ii. definitions of chronic pain and psychological injuries;

      iii. expert medical panels to make conclusive determinations as to which claimants fall into which categories;

      iv. treatment regimes that will include an intended resolution date for the claimant and the service providers;

      v. an independent oversight body to supervise treatment providers to ensure that health providers are following evidence-informed guidelines in regimens to ensure optimal recoveries for traffic injured;

vi. a structured review process for traffic injured not recovering within the normal treatment guidelines or whose recovery has plateaued so that they can be referred for alternative treatment;

vii. clear return to work guidelines for claimants seeking disability payments to encourage gradual return to work programs, modified duties or retraining for different occupations;

viii. regulation of fees for health and dental health providers;

ix. means of collecting and aggregating health treatment data to ensure ongoing monitoring and evaluation of care programs, outcomes and continuous improvement of first party compensation based on reliable data; and

x. implementation of an electronic system for auto insurers in conjunction with a traffic injury regulator, health care and ancillary service providers to expedite transmission and processing of claim forms.

3. The Committee recommends the continuum of care model described in this Report be adopted as part of its proposed pure no-fault accident compensation model, with the intention that its service providers be subject to oversight of a new Traffic Injury Regulator as described in this Report.

4. The Committee recommends that the GOA engage a team of competent health providers to collaborate with the regulators and insurers in the design and delivery of a fundamental reform of the accident compensation model to eliminate adversarial conduct and unnecessary commercial operations currently existing between the traffic injured and the administrative health delivery and compensation services they require.

## Reforms to the Assessment of Injury and Pecuniary Loss Process

5. The Committee recommends replacement of the current model with a pure no-fault care model to compensate all traffic injured without the requirement to prove fault of a negligent driver to be overseen and regulated by alternate traffic accident administrative structure, similar to Alberta workers compensation and other workers compensation models, which provide individualized assessments by a panel of medical experts and claims assessments by panels of experts. However, in the case of an Alberta traffic accident compensation model, the Committee recommends a model that takes the most effective features of those successful models and designs additional features that address the needs of the array of traffic injured that vary greatly from injured workers.

## Section B Benefits

6. The Committee recommends that the current component of no-fault Section B Benefits be replaced by a pure no-fault model to provide appropriate insurance coverage to all traffic injured regardless of fault. The Committee recommends that the AIRB, either as it presently exists or reconstituted to enlarge its mandate, should have co-extensive authority to monitor and oversee the array of optional insurance products offered by insurers to supplement the health benefits provided to Alberta motorists under the reform from a pricing and consumer fairness perspective.

## Establishment of an Independent Administrative Structure of Traffic Accident Regulation

7. The Committee recommends the establishment of a board and tribunal, described in this Report as the Traffic Accident Regulator, to oversee all operations and act as authority of last appeal which:
   a. serves as regulatory accident compensation tribunal for oversight of claims processes to ensure fair determination and provision of claimants' health and financial entitlement to benefits;
   b. serves as regulatory accident compensation tribunal for oversight of health and medical treatment, assessment and evaluation of permanent injury to ensure fair determination and provision of claimants' entitlement to health benefits;
   c. serves as regulatory accident compensation tribunal for oversight of claims assessment panels to ensure fair determination and provision of claimants' financial entitlement to benefits and compensation; and
   d. structured in a manner similar to the current Alberta WCB model although led by a statute appointed leader to ensure independence.

8. The Committee recommends that the Traffic Accident Regulator establish four administrative arms to oversee specific aspects of the pure no-fault accident compensation system.

9. The Committee recommends the Traffic Accident Regulatory model establish groups of subject matter experts that will serve on panels to provide conclusive and final medical evaluations, conclusive income loss assessments, oversight of health service providers to ensure ongoing education and professional development, and evidence-informed results.

10. The Committee recommends such alternative model select the most highly qualified medical and health experts, and the most highly qualified financial and vocational experts, the most highly qualified educators, all of whom will provide expert advice and will work collaboratively to determine medical impairment and future treatment issues, income calculations, and future care needs. Such collaborations will eliminate the need to prepare written reports for litigation proceedings, promote evidence-informed practices and protocols and hasten incorporating new innovations that can speed up treatment and recovery of traffic injured.

11. The Committee recommends the Traffic Injury Regulator establish maximum recovery standards to encourage and enable all participants, including traffic injured, health providers and claims navigators to move collaboratively toward closure of claims at the appropriate recovery milestones. These goals would be optimally delivered by removal or diminution of monetary gain incentives. Where insurers have developed an array of optional pecuniary and non-pecuniary insurance products, those can provide suitable supplements to consumers who desire to purchase the same for additional protection and security.

12. The Committee recommends that where a medical expert panel concludes injury recovery has been attained as far as possible, benefit and income claims are referred to a claims assessor panel for final resolution. If optional products are offered by the industry, those coverages may, subject to the traffic regulators, establish contractual terms for provision of the benefits.

## Health Outcomes Evidence

13. Medical and health treatment for all traffic injured in Alberta should be reformed to incorporate and conform to consistent evidence-informed practices.

14. All reforms that can align with improved health outcomes for traffic injured should be incorporated into a reformed care and compensation traffic insurance model.

15. In light of compelling evidence that being involved in litigation can adversely affect a person's health, any services provided under the current model that directly or indirectly promote or sustain litigation, adversarial conditions, points of dispute, duplication of examinations and assessments or that otherwise do not promote prompt and optimal recovery of traffic injured should be eliminated.

16. Specifically, roles of service providers of treatments, follow-up visits, and referrals when patient health benefit or medical need is not informed by reliable evidence, or consultations in respect securing benefits, or income replacement, which may as a consequence prolong recovery by legitimizing patients' fears and creating unnecessary anxiety, should be eliminated.

17. Reform legislation should promote early acceptance of genuineness of reported symptoms of traffic injured and delivering prompt and appropriate pathways for ensuring appropriate treatment.

18. New protocols for treatment of all traffic injured must be introduced and regularly reviewed and refined with data developed and analyzed to minimize or eliminate overtreatment, undertreatment or ineffective and incorrect treatment of traffic injuries.

19. A reformed care model for Alberta should build on the existing DTPR model and expand it to be available to all traffic injured under a pure no-fault care model.

## Program for Long-Term Care for Catastrophically Injured

20. The long-term care medical professionals should be engaged to assist in implementation of a long-term care model that would best serve the needs of those severely injured in traffic accidents.

21. The no-fault long-term care model established in New South Wales in 2007 should be considered as an example for persons severely injured in traffic accidents. The property and casualty insurers who distribute automobile insurance policies in Alberta should be engaged in dialogue to determine the viability of establishing a funding pool model to support a long-term care program.

22. A pure no-fault care model for Alberta should optimize development and application of data technology including innovations such as artificial intelligence to further identify and add evidence-based improvements to diagnosis and treatment to provide continued renewal of treatment modalities.

23. The Committee recommends that the GOA give consideration establishment of an ombudsperson or ombudsperson office for which to make application for additional compensation in exceptional or extraordinary cases. Such an office may serve to identify any cases that do not appropriately fall within one of the categories of injuries or due to extenuating circumstances warrant additional consideration.

24. The Committee recommends that the Auto Insurance Rate Board should be reformulated to comprise an essential part of a larger Traffic Injury Regulator. Those features that work well under the current private enterprise model should be retained and blended with those features that work well under the current Alberta Workers Compensation Model and which could be appropriately adapted to a comprehensive Traffic Injury Regulator in a private enterprise environment.

25. The Committee recommends that the most successful and applicable features of the current Alberta Workers Compensation model in terms of administrative regulatory structure be utilized as a guide in the design and then modified for the traffic accident injury context.

### Implementation of reforms requires collaboration of insurance and health service providers

26. The Committee recommends that the ultimate details of a reformed pure no-fault auto insurance compensation model be developed in consultation with selected health and medical experts and thereafter ancillary health service providers.

27. The Committee recommends that there be consultation with insurance industry experts to determine what modifications are optimally delivered without compromising the reasonable needs of motorists.

28. The Committee recommends that more expanded collaborative dialogue be undertaken among the auto insurance industry, health providers, claims providers, proposed injury navigators and GOA officials prior to and in the implementation phase before a final design is adopted.

## Property Damage Product Reform

29. The Committee recommends that the property damage component of the auto insurance compensation system be converted to a no-fault model known as Direct Compensation Property Damage (DCPD) under which the insured motorists' insurers will process the costs of repair directly in any event of fault. A driver who caused the collision will continue to be found responsible for the purpose of assessing appropriate rate adjustment.

30. The Committee recommends oversight of this program should be reposed under the AIRB, or as it may be reconstituted under a reform model. Implementation of this reform should be subject to transitional legislative change provisions to allow for orderly resolution of existing claims, including those under the *Motor Vehicle Accident Claims Act*.

## Reforms to Address Risky Driving Behavior

31. The Committee recommends the GOA legislate increased penalties to punish and deter all types of risky driving behaviour.

32. The GOA should help enhance data collection of accident statistics to inform an education program to promote traffic safety. As well, all service providers should assist the GOA in:

    a. collecting relevant collision data about traffic collisions including by use of technological and other innovations;
    b. participating in providing more and consistent education about the dangers of and penal consequences for risky driving behavior;
    c. modifying the graduated licencing program to be principle-based and more affordable for new drivers; and
    d. developing consistent and informative education programs for consumers to foster a greater understanding of automobile insurance issues.

## Reform of the Regulatory Process

33. The Committee recommends that the AIRB, or as it may be reconstituted to enlarge its mandate, determine and advise GOA whether the goals of auto insurance regulation would be better served by:

    a. retaining the prior approval model or converting to a file and use model with a designed set of principles;
    b. establishing a practice of publishing guidelines to apprise insurers of what information is appropriate to include in rating applications relative to risk assessment;
    c. evaluating, eliminating or replacing the “all comers rule” and the Grid;
    d. exploring whether to revert to previous Facility Association ceding arrangements and overseeing its premiums to ensure adherence to social policy considerations and actuarial evidence;
    e. revising, expanding or eliminating the current Territories designation;
    f. publishing and disallowing use of only those rating factors that are prohibited;
    g. establishing and enforcing remedies for non-compliance with those guidelines;
    h. preserving a voice for a delegate of the Superintendent of Insurance in the rate approval process; and
    i. consultation with its counterparts in other provinces, the Facility Association and auto insurers who carry on business in Alberta, to investigate whether to replace or maintain the all comers’ rule and the Grid or devise an alternate mechanism that will be optimally responsive to market conditions as they evolve from time to time, and has regard to the following guiding principles:
        i. The premium charged to all motorists, including new entrants, fairly represents their risks;
        ii. The alternative solution must be transparent, easy to understand, administratively viable and sustainable;

iii. The alternative solution must strive to minimize cross-subsidization within the reasonable limits of an insurance system;

iv. the mechanism must ensure that no consumers are subject to unfair market practices;

v. the alternative solution must be flexible and adaptable to technological advances; and

vi. the alternative solution must be reviewed periodically to ensure it continually responds to needs of consumers.

34. Either the AIRB or a newly established Traffic Regulator should investigate provision for coverage for claims by pedestrians and cyclists not otherwise covered by auto insurance.

### *Judgment Interest Act*

35. The Committee recommends the GOA amend the *Judgment Interest Act* to make the rate for non-pecuniary damages the same as the rate for pecuniary claims and to suspend claims for judgment interest on non-pecuniary damages for the two year period from the date of loss.

## Optional Property Insurance Products

### User Based Insurance

36. The Committee recommends that the AIRB, either as it presently exists or reconstituted to enlarge its mandate, should have exclusive authority:

a. to collect more data about the potential costs and benefits of UBI;

b. to determine whether expanding the areas of its current use would be fair to consumers and insurers;

c. to determine what restrictions or guidelines should be implemented;

d. to determine what information and education should be distributed and provided to motorists; and

e. to determine what recommendations should be made to GOA to reform regulations pertaining to the same.

## Legislation to mandate use of winter tires

37. The Committee recommends the GOA enact legislation to make mandatory use of winter tires for motor vehicles for some specified period between October and March of each winter season.

# III Introduction

The Minister of Finance for the Government of Alberta tasked this Committee to lead reform of the Alberta automobile insurance system so that it is viable, sustainable, provides fair, accessible and affordable automobile insurance for Albertans and timely and appropriate outcomes when claims are made.

The terms of reference for this Committee are clear that the supplier of a reformed product will remain the private property and casualty industry licensed to write automobile insurance in the province.

An automobile accident compensation system is complex and involves a wide range of dynamics, behaviors, customs and processes that would require change to attain effective long-term reform. Delivering these outcomes will require a significant recalibration of the existing injury compensation components which may necessitate reduction or re-engineering of the roles of certain service providers, other than the supplier of the insurance product. With planned redistribution of resources, dislocation and disruption should be expected during the transitional period. Some existing service providers may prefer or be required to exit a reformed compensation model whereas opportunities may emerge for new service providers.

As reform is investigated, it is important to delineate the two categories of persons who will be affected. One category consists of service providers who perform roles in the existing system, including insurance, health care and legal professionals, insurance brokers and agents, auto insurance regulators, suppliers and the legislators. However, as worthy as their interests and perspectives may be, it must be understood that those participants are not a genuine part of the motor accident compensation stake holding arrangement.

The only true fundamental stakeholders are the traffic injured, and the Alberta motorists who collectively pay for the losses of the traffic injured, as well as the fees, expenses and costs of various service providers. It is important to reflect on the requirements and interests of these true stakeholders, separate and apart from the service providers who represent them.

The true stakeholders in this arrangement are not in it by complete freedom of choice. Any Albertan who wishes to operate a motor vehicle in the province must purchase and maintain valid automobile insurance because the law has declared it mandatory to do so. Because the private industry suppliers are numerous, there is some variation as to the cost of mandatory insurance, but the fact remains that Alberta motorists must purchase the product.

Purchasing auto insurance is often considered a necessity, rather than a choice, for those Albertans who drive for a living, or who must use a vehicle to travel distances to meet their living requirements.

The traffic injured are also not in the stakeholder arrangement by choice. No reasonable Albertan would seek to be injured in a motor vehicle accident, although some of the reasons for increased insurance costs include the existence of fraudulent or exaggerated claims.

Sometimes, but not always, the traffic injured also belong to the other stakeholder group, namely motorists, if they own an auto policy and pay into the pool of premiums to pay for their losses.

Automobile insurance differs from all other forms of insurance, because it deals with a private driving activity on public roads where people are placed at risk. Operating a motor vehicle is both a high-risk activity and one which most people engage in without expecting to cause or sustain injuries. In particular, most motorists do not expect a minor driving error could cause catastrophic injuries. This likely explains why automobile insurance was first made mandatory by law In Alberta in 1975.

Alberta policyholders who have never been injured in a motor vehicle accident are not likely to have a detailed understanding of the processes provided and required by traffic injured to obtain medical and health treatment to attain recovery or what specific financial benefits may be claimed for under the current system.

Albertans who have not sustained a traffic injury may not be aware that if they choose to retain legal counsel to pursue full monetary compensation in the court system, it may necessitate delay in receiving payment for desired and recommended medical and health care treatment, in receiving payment for loss of income or payment for various expenses needed to approve the claim, and the requirement to attend upon extra numbers of health experts to evaluate the state of their injuries.

The delay is often extended because the lawyers for the opposing parties each engage their own sets of experts on several categories of claims such as loss of past earnings, future earnings, earning capacity, rehabilitation, pain and suffering and loss of amenities of life.

Because the Alberta law has made auto insurance mandatory, the government has also established an independent auto insurance rate board (AIRB) to oversee the rates of automobile insurance in Alberta to ensure that the suppliers are charging a fair price for the product they provide. The AIRB independently evaluates complex actuarially based rating data to predict future loss costs for property damage and bodily injury to ensure motorists pay appropriate premiums that relate to the risk. However, it is not designed to, nor does it have any input or power to modify the impact on the measurement of injury awards produced by the legal system in lawsuits advanced by traffic injured.

The legal profession in Alberta provides its services to traffic injured even though it is recognized that money cannot adequately compensate for pain and suffering. It proceeds on the rationale that nevertheless money remains the best that can be provided by way of recompense for pain and suffering and the loss of enjoyment of life that results from traffic injuries.

A third aspect that factors into the quest to balance the requirements of traffic injured and auto insurance policy holders is the impact of judicial decisions that establish legal precedent as to the proper measure of money damages for individual traffic injured losses. A court case which awards higher amounts than previous decided injury cases usually results in a ripple effect of elevation of global damage awards for non-economic losses for pain and suffering and loss of enjoyment of life and for certain future economic losses in subsequent settled or tried cases.

The court process for assessing tort awards and the roles of legal service providers are not designed to, nor do they normally present, weigh or take into account evidence about the impact of those awards on the affordability of prices of auto insurance to policyholders.

Increased awards year over year make the actuaries' task of predicting future loss costs more and more uncertain, although it is certain that the premium levels must increase in response to the inflation of injury awards and settlements. In the end, it must be remembered that it is ultimately the individual policyholders who pay for the continuing annual increases in auto insurance premiums.

The path to recovery from traffic injuries is also not a static one. Medical science and research continually identify improved remedies, but such innovations are not always transmitted quickly, consistently and comprehensively throughout the accident injury health care system to the traffic injured.

With this overview, this Committee began its task to identify reforms to the current model that will provide major improvements for traffic injured. This may be expected to include more transparent, comprehensible and uniform service from the responding insurers, claim management that is better timed, is based on interdisciplinary evaluation of rehabilitation treatment, biopsychosocial and economic needs and has a view to restoring the traffic injured as far as possible to pre-accident health and life activities.

At the same time, the Committee would have to evaluate reforms that will ensure as far as possible that auto insurance is accessible, affordable and sustainable in the long term for the average Alberta motorist.

This Committee would carefully consider the views the service providers in this auto insurance system as regards the questions about how to better serve the true stakeholders. It recognizes that these service providers have legitimately conducted business and performed their roles in the existing system with obligations to do what they do within the regulations to maximize the benefits to their clients.

However, the Committee would have to weigh and balance these views in the context of what reforms are required for the benefit of the two true stakeholders. The Committee's task is to recommend improvements so that traffic injured can more quickly get their lives back on track and so that motorists better understand where their premium dollars are applied in the compensation system, what factors affect the cost of automobile insurance and what factors will best achieve long-term premium stability so that they can expect in future to secure auto insurance that is more affordable, more available and less volatile in pricing increases.

# IV Automobile Insurance Reform

# A. Chronological Review of Auto Insurance Reform and Analysis

The idea that the tort based system of compensation for automobile accident injuries in North America suffers from some fundamental unfairness is not a new one. Studies as early as 1932 have observed that many traffic injured are undercompensated or not compensated at all under tort based systems, while others, often those with less serious injuries, are overcompensated at the cost of the premium pool. These studies have spawned public debate over alternative compensation models followed by incremental legislative reform. A review of the studies and reforms followed by a deeper analysis of the reforms will help to explain why, in Alberta and elsewhere, the fundamental unfairness and premium instability continues to exist.

## Societal response to automobile accidents

Legal commentators have identified the rationale for the traditional tort action as the primary societal response to accidents injuries on roadways in North America. As noted by Professor Ison in *The Forensic Lottery*, p 31-32 (1967):

"... [UK...] Parliament went no further than to require the owners of motor vehicles to carry third-party liability insurance. At the same time, a thorough interdisciplinary research project on compensation for the victims of road accidents... was undertaken at Columbia University in New York. The committee engaged in the study reported in 1932 recommending a scheme analogous to workmens' compensation.... This proposal has been the subject of political controversy in several of the United States, but has not so far been enacted. The adoption of such a plan, however, continues to be advocated in several countries, including Britain."

Professors Keaton and O'Connell in their textbook *Basic Protection 1-3* identified deficiencies in the negligence claim as a model for fair and timely compensation of traffic injured:

[M]easured as a way of compensating for personal injuries suffered on the roadways, the system [in the United States] falls grievously short. Some injured persons receive no compensation. Others receive far less than their economic losses. Partly this gap is due to the role of fault in the system...

Second, the present system is cumbersome and slow. Prompt payments for compensation for personal injuries are extraordinary indeed. And delays of several years before final payment – or determination that no payment is due – are common, especially in metropolitan areas. The backlog of automobile personal injury cases presents a serious community problem of delay in the courts, affecting other cases as well.

Third, the present system is loaded with unfairness. Some get too much – even many times their losses – especially for minor injuries. To avoid the expense and risks of litigation insurance companies tend to make generous settlements of small claims. This largesse comes out of the pockets of all who are paying premiums as insured motorists. Others among the injured,... get nothing or too little, and most often it is the neediest (those most seriously injured) who get the lowest percentage of compensation for their losses. Their larger claims are more vigorously resisted, and their pressing needs induce them to give up more in return for prompt settlement.

Fourth, operation of the present system is excessively expensive. It is burden enough to meet the total of losses that are inescapable when injuries occur. It is intolerable to have to meet the additional burden of administrative waste built into our methods of shouldering inescapable costs.... In the cases of relatively modest injury, the expense of the contest often exceeds the amount claimed as compensation. All this expense, of course, is added to automobile insurance costs and... is reflected in the premium of every insured.

Fifth, the present system is marred by temptations to dishonesty that lures into their snares a stunning percentage of drivers and victims. To the toll of physical injury is added all of psychological and moral injury resulting from pressures of exaggeration to improve one's case or defence...

## Chronological review of auto insurance reform models between 1946 and 2015

### The Columbia Plan (1932)

The Columbia University Council for Research in the Social Sciences issued a report in 1932 entitled *Report by the Committee to Study Compensation for Automobile Accidents* (*Columbia Report*). The Committee relied on information indicating that attorneys' fees ranged from ¼ to ½ half of sums recovered in negligence actions. The plan it proposed had the following features:

a. every registered motor vehicle was compelled to be covered by compensation insurance;
b. there was a compensation fund pooled by insurance premiums to compensate persons killed or injured by the operation of a registered vehicle without regard to fault;
c. there was no compensation for a vehicle operator involved in a single vehicle accident or to anyone for pain and suffering;
d. payments were made for wage loss with deductible and maximum amounts in place and made on a periodic as opposed to a lump sum basis;
e. medical care was covered;
f. property damage was outside the plan for the reason that private insurance coverage could fill this gap;
g. a person in receipt of benefits under the Columbia Plan could not sue in tort. (in court);
h. the plan would be board administered; and

i. the framers of the Columbia Plan believed most claimants would not retain lawyers which prompted the conclusion that "a larger portion of the money paid in premiums would find its way to injured persons". (p 150)

## The Saskatchewan Plan (1946)

In 1946 a committee to study accident insurance compensation produced a report entitled *A Report on the Study of the Problem of Compensation for Victims of Automobile Accidents*. The report recommended compensation for injury or death regardless of fault.

Despite the recommendation, the Saskatchewan government enacted legislation which continued with tort but provided limited compensation on a no-fault basis to persons suffering bodily injury or death due to a motor vehicle accident. It was the first limited no-fault auto insurance plan in North America. It provided basic universal insurance to Saskatchewan owners and drivers on a break even basis. It did not include property damage or third-party liability. Premiums were to pay benefits and expenses. Any deficit was made up through increased premiums.

The Saskatchewan government enacted further legislation in 1948 which included collision, public liability and property damage insurance coverage. In 1953 it extended coverage for increased limits. High claims led to the first deficit which resulted in a rate increase.

The introduction of no-fault benefits legislation did not occur in any other Canadian provinces for approximately 25 years from this time.

The nature of the no-fault benefits when introduced in other provinces, i.e. Ontario in 1969, British Columbia in 1970, and Alberta in 1975, varied from jurisdiction to jurisdiction, but typically provided for some measure of income replacement, medical and rehabilitation expenses and death benefits. The intent was to provide some protection to the accident victims for the pecuniary losses and initially, these benefits were paid promptly.

For those who had an action in tort, the no-fault benefits provided interim support until the action could be set for trial. Those who could not maintain a tort action received only some indemnification for financial losses.

## *Royal Commission on Automobile Insurance, Report of the Commissioner*, (July 30, 1968) (British Columbia)

On January 25, 1966 the British Columbia government appointed a *Royal Commission on Automobile Insurance* led by Justice R.A.B. Wooton to address the public discontent over the rapidly increasing cost of automobile insurance, specifically, to determine whether a no-fault scheme or the current tort process would be better in dealing with claims of persons injured in automobile accidents.

Following an exhaustive investigation, including a review of models in other jurisdictions, the Royal Commission (*Wooten Report*) in the words of Professor Craig Brown "delivered a condemnation of the tort system as it applied to automobile accidents. It recommended a pure no-fault scheme completely replacing tort law for automobile insurance."

The *Wooten Report* found there was dissatisfaction with the tort system, the cost of automobile insurance, litigation delays and lack of compensation for the at-fault driver who suffered serious injuries. It concluded that "the fault system cannot adequately protect the general public insofar as the automobile accident is concerned. [The Commissioners]

are firmly convinced that by a system of no-fault cover aided by other factors, the motorist and the general public would be better served." *Wooten Report*, 84 (1968).

Professor Brown noted that the Commission "stated a preference for competition as the means of encouraging innovation and serving the interest of consumers, and… came down firmly against the government monopoly for automobile insurance." (*No-Fault Automobile Insurance in Canada*, Craig Brown, Carswell 1988, pp 26-27)

### *Report of the Committee of Inquiry on Automobile Insurance* (1974) (Quebéc)

In May 1971, the Government of Québec appointed a Committee lead by M. Jean-Louis Gauvin to report and make recommendations on the measures that should be adopted to reduce the cost of automobile accident losses and provide adequate compensation to victims in as equitable manner as possible, as well as on the findings made during its study.

In 1974 the *Auto Insurance Study Committee Report* (*Gauvin Report*) concluded that the fault concept must be completely abolished. The Committee had considered partial tort reforms but concluded they were compromises and half measures which were not acceptable because the compensation was inadequate for those in the greatest need such as insureds suffering from long-term disability, their dependents, dependents of those killed, and dependents of those drivers who were judged at fault and to whom compensation was refused. It said adequate compensation in all cases has a price, but if desirable to reduce the cost of automobile insurance, it would be wrong to do so by reducing the compensation to those who are the most disadvantaged.

In an historical account published in 1999 by one of the Committee members, (Claude Belleau) it was reported that every service provider directly affected rejected the notion of no-fault insurance (and a government monopoly delivery system). However, consumer groups and trade unions endorsed a no-fault insurance model.

Due to continuing public controversy, a subcommittee led by Québec Court Justice Desjardins was struck to examine the *Gauvin* proposals. It examined four options and its report of July 1975 adopted the *Gauvin* recommendations (except on the government supply aspect instead, suggesting entrusting administration of the basic compensation plan to existing government organizations).

A newly elected Québec government would not then endorse the *Gauvin Report* proposed no-fault model mainly due to the expected costs of transitioning to a government monopoly model that would increase premiums. It instead proposed a compulsory auto product with a modified no-fault plan, a proposal which was not favourably received.

In August 1976, the then elected Parti Québécois formed a Task Force which resulted in a report made public on April 15, 1977. That Task Force endorsed the concept of a full no-fault plan for bodily injuries but not full government ownership of all automobile insurance.

Instead, the Task Force proposed to entrust management of the basic plan for bodily injuries to a public insurer and let private insurers offer supplementary optional no-fault insurance plus compensation for property damage. It stated its preference to separate that part of automobile insurance that is of social importance to that part which is not. It hinted at a return on

premiums in the form of indemnities reaching 75 to 80% but did not promise a significant reduction in auto insurance premiums.

The Task Force received criticism from insurers, lawyers, trade unions and the news media mainly for the lack of commitment to reducing premiums. It was claimed that such a dual system would increase management process costs. Lawyers, brokers and claims adjusters all objected to their roles being reduced or locked out altogether. The Minister undertook a consultation tour which answered many public questions.

A Parliamentary Committee then studied the new bill for four months and received briefs opposing the plan from all vested interests.

On March 1, 1978, the government of Québec instituted a government monopoly compensation plan over the bodily injury portion while the property damage coverages remained in the hands of private insurers. The government also introduced the pure no-fault scheme which entirely eliminated the right to sue. It substituted a schedule of no-fault benefits to include awards for pain and suffering, as well as economic losses provided through mandatory first party insurance, to all individuals injured in automobile accidents.

The government also established the "Régie de l'assurance maladie du Québec" (Régie) as a Crown corporation to be responsible for providing public auto insurance for all drivers, passengers, pedestrians, bicyclists and motorcyclists involved in road collisions, whether or not they were at fault.

Belleau reported that the Québec system was very successful with respect to the issue of return on premium. An assessment in 1995 (Fluet-Lefebvre) estimated that the return for bodily injury claimants was 61% of the premium for the period 1978 to 1987. Between 1988 and 1992, it reportedly rose to 96%.

The Régie's successor, the Société de l'assurance automobile du Québec/Québec Automobile Insurance Corporation)(SAAQ), continues to operate the compensation fund for property damage due to uninsured or unidentified drivers. It paid $87 million from 1978 to 91 comprised of $5 million for administrative expenses and received $35 million from at-fault drivers. Between 1992 and 1994, it paid $0.9 million for administrative expenses.

## Ontario Task Force on Insurance 1986

A Task Force led by the Ontario Minister of Financial Institutions appointed January 1986 and reporting May 1986 concluded that the tort system was not defensible, in theory or in practice, and that personally injured traffic victims would be better served under a pure no tort system. The reasons included:

a. the tort system in the personal injury area has reached the limits of its capacity: continuing it as a compensation mechanism using notions of negligence or fault will only deepen the incoherence, instability and continuing unpredictability;
b. proposals for tort reform that continue to obscure the fundamental tension between insurance and deterrence should be rigorously resisted;
c. deterrence can be answered outside of tort;
d. the compensation rationale fails, in theory and in practice;
e. compensation should proceed on a no tort basis;
f. fault will remain relevant in the premium pricing mechanism;

g. no tort accident compensation should remain in the hands of private industry so long as it can demonstrate its financial capacity to deliver at affordable premium levels;
h. the auto policy should provide unlimited medical and rehabilitation benefits, including cost of care and income replacement benefits at levels that should be reasonably adequate for the majority of citizens; and
i. additional coverage for income replacement in excess of basic insurance should be made available on the first party basis through voluntary purchase of additional layers.

### *Report of Inquiry into Motor Vehicle Accident Compensation in Ontario* (1988)

Mr. Justice C. Osborne (*Osborne*) was appointed by the government of Ontario in May 1986 to consider the appropriate design of a no-fault system. He examined all aspects of Ontario's automobile insurance compensation scheme in his *Report of Inquiry into Motor Vehicle Accident Compensation in Ontario* delivered in February 1988.

Despite recognizing the favorable features of a pure no-fault model, *Osborne* concluded that the public did not seem to want it. He also expressed limited enthusiasm for threshold no-fault plans. He recommended that should the Government desire to introduce a no-fault compensation plan, consideration should be given to a modified threshold plan capping pecuniary damages for less serious injuries. (*1 Osborne* report 53). A more detailed examination of the analysis of alternate models by *Osborne* and others is found in Section IV B of this Report.

In exploring the question why no-fault compensation for workplace accidents is nearly universally recognized now, but not in the field of motor vehicle accidents, Osborne opined that one explanation for the difference might lie in the fact that both the legal profession and the insurance industry had a great deal at stake in the maintenance of the existing system and were able to exert a considerable influence against the widespread adoption of a no-fault system of compensation. He then noted that the insurance industry had, since 1970, altered its position by supporting a threshold no-fault model.

### *Report of the Autopac Review Commission* (September 1988) (Manitoba)

Public dissatisfaction with the performance of the Manitoba Public Insurance Corporation prompted the Manitoba government in 1988 to establish the Autopac Review Commission chaired by Judge Robert Kopstein which in September 1988 issued the *Report of the Autopac Review Commission* (*Kopstein Report*).

The *Kopstein Report* stated that the provision of a reasonable living standard for the catastrophically injured must be the highest priority of an automobile compensation scheme. (*Kopstein Report* 102). The Commission recognised this priority might require reducing compensation for those suffering minor injuries:

"Minor injuries are disruptive and uncomfortable, but not tragic. It is, in my opinion, the potential to be injured critically and disabled permanently that motorists should most fear. It is for that eventuality that insurance make uncontested access to an acceptable level of compensation available. If it is necessary to compensate minor injuries less generously than at present in order to assist in the financing of adequate compensation for those severely and permanently disabled, it is appropriate, in my opinion, to do so. The largest portion

of insurance premiums pay for vehicle repairs and for minor injuries. To the extent that it may be necessary to limit those benefits within an affordable insurance plan design to restore, to a reasonably comfortable standard, individuals with suffered catastrophic personal injuries, they should be limited."

The Commissioners were firmly of the opinion that tort concepts provided inequitable results for injured person and recommended a pure no-fault compensation similar to that of Québec (*Kopstein Report* 105).

On March 1, 1994, the Manitoba government acted to contain large increases in bodily injury claims costs with the introduction of the Personal Injury Protection Plan. Modest no-fault benefits replaced the old tort-based model.

### *Alberta Automobile Insurance Board, Study of Premium Stability in Compulsory Automobile Insurance* (September 12, 1991)

In 1990 the Alberta Automobile Insurance Board (AAIB) in response to public concerns about rapidly rising automobile insurance premiums and at the request of the Government of Alberta Minister of Consumer and Corporate Affairs, undertook a study of the Alberta automobile insurance system to determine whether there was a problem with premium stability, and if so, whether the cure was to modify its tort and no-fault features. (*AAIB study*)

The *AAIB study* showed that loss costs had increased dramatically since 1985 due to the increase in bodily injury loss costs, mostly resulting from non-pecuniary general damages claims. The AAIB said it expected loss costs would continue to increase because of continuing increases in frequency and severity of injury claims.

The AAIB also made the following findings:

a. claimants with minor injuries are overcompensated in the tort side of the system relative to all the traffic accident claimants with catastrophic injuries or undercompensated in the tort side of the system relative to all other traffic accident claimants. (*AAIB Study* 2);
b. at-fault claimants were inadequately compensated for the economic losses relative to tort claimants and there were structural deficiencies in the delivery of benefits in the current system. (*AAIB Study* 2);
c. all payments required under the system are subject to delays;
d. between 1988 and 1990, bodily injury loss costs increased 12.9%, more than twice that of the Consumer Price Index. (*AAIB Study* 3);
e. there was a pricing problem in the system because premium levels were not sufficient to meet current loss costs;
f. one of the reasons for that deficiency was that loss costs had increased at unusually high rates;
g. as there was no specific feature operating in the current system to control increases in claims costs, the AAIB expected loss costs to continue to increase in the long term unless bodily injury loss costs were curtailed in some fashion. (*AAIB Study* 3);
h. the more prices increase, more and more motorists would have difficulty affording automobile insurance. The resulting dissatisfaction would have to be addressed either by the participants in the system or the government, or both;

i. there was no uniform viewpoint among participants in the system about whether the costs or premium levels should be curtailed to preserve the balance in the system;

j. one of the methods examined to control premium increases was to reduce the amount paid to traffic injured;

k. AAIB recommended that to obtain the goal of premium stability and to maintain the cost of automobile insurance at an acceptable level, there must be a reduction or limitation of the amount of monetary compensation provided to accident injury victims. (*AAIB Study* 6);

l. AAIB observed that no one system is superior overall in obtaining the objectives of the automobile insurance system. It nevertheless commissioned an analysis of the current system and five alternative models;

m. AAIB did not recommend a pure no-fault model similar to that in place in Québec;

n. AAIB recommended three options. Option 1 was limitation of the right of recovery for all non-pecuniary damages in the form of a deductible of $10,000;

o. Option 2 was the implementation of enhanced no-fault benefits scheme with full tort rights subject to a deductible of $10,000 for all non-pecuniary damages and other tort reforms; and

p. Option 3 was the implementation of a threshold no-fault system similar to that in place in Ontario in 1991 under which tort rights would be restricted to only the most serious injury claims with enhanced no-fault benefits for other traffic injured.

## Government of British Columbia consultant study (1996)

British Columbia motorists in about 1995 were reporting premiums were too costly. The British Columbia government froze rates for 1996 and 1997 and requested Insurance Corporation of British Columbia (ICBC) find ways to cut costs and control rising premium levels.

ICBC commissioned a study by three consultants, including KPMG, Eckler Partners and Exactor Services Inc. (the *KPMG report*) which delivered the following findings:

a. motor vehicle insurance costs increased higher than the rate of inflation from 1986 to 1996;

b. the average premium increased by 135% over the same period;

c. claims costs represent about 79% of total expenditures and increased at more than 6.5 % per year, after inflation;

d. claims operating cost expenses and commissions grew 5% per year faster than inflation over 1985 to 1995;

e. the introduction of premium tax in 1987 added to the increase in product costs;

f. bodily injury claims represent $0.50 of every dollar of claims, including legal and other tort claims costs;

g. the real bodily injury claims cost per insured vehicle nearly doubled over the ten-year period;

h. the trend was due to increased claims frequency and increase in average cost per claim;

i. bodily injury claims grew at 7% per year, far faster than rate of property damage claims;

j. bodily injury claims increased 50% over the past 10 years;

k. the propensity to file personal injury claims increased by 40% over the 10 years;

l. the average bodily injury claim was four times the average property damage claim; and

m. rising claims costs and numbers appeared to due to

   i. increasing propensity and ability to maximize awards especially due to non-economic losses;

   ii. growing sense of entitlement to receiving motor vehicle insurance payments;

   iii. growing inclination to focus on pain and suffering;

   iv. increased advertising by lawyers and tendency to seek legal representation;

   v. willingness of courts to increase types and amounts of compensation awards; and

   vi. increased incidence of fraud.

The study provided a cost breakdown of ICBC dollars from 1995 data which showed:

a. 87% of the costs related to payments to claimants and claims related expenses;

b. 8% of costs were paid for distribution of the product;

c. 9% of total expenses or $223 million represented total legal costs;

d. $670 million were paid to external suppliers, including defence counsel, glass repair shops, car rental agencies, medical payments and the like; and

e. brokers were paid $151 million.

In total, only 2/3 of claims costs and expenses were put in the hands of claimants for their claims or damage repairs. For personal injury claims, claimants received only 72% return with 17% paid to legal services.

The *KPMG report* provided a further explication of legal costs for 1995 as follows:

a. ICBC in-house legal department – about $7 million;

b. ICBC external defence counsel hired to defend tort claims – about $53 million;

c. cost for expert reports, independent adjusters, and private investigators required for litigated claims – about $17 million; and

d. estimated Plaintiffs' costs, including contingency fees and disbursements – about $146 million.

The *KPMG report* concluded that only by changing the volume and nature of claims shaped by the design of the insurance product could sufficient savings be achieved to bring loss costs in auto insurance under control. It stated that tinkering with or fine-tuning the product would not be sufficient and all service providers must make an equitable contribution to the solution.

The *KPMG report* said that the main benefit of the existing system is the preservation of the right of access to an independent process toward fair compensation to an innocent person injured by bad driving conduct. However, when this principle was measured against the deficiencies in the system, such as long delays and certainty about adequacy of compensation and rehabilitation, potential for exaggeration of claims and the high legal investigative cost to establish claims, it concluded such deficiencies work against the recovery of the traffic injured, erode the economics of the system and create an intolerable financial burden on policyholders.

The *KPMG report* recommended the system reform should:

a. embrace a comprehensive solution to realign the priority in favour of the seriously permanently and grievously injured;
b. accept that much of driving behaviour that causes accidents is due to inadvertent, momentary inattention or unexpected climate conditions that can happen to normally safe drivers; and
c. reframe the goals from acquiring as much monetary recovery as possible to achieving more effective health outcomes and wellness.

The *KPMG report* cautioned:

a. underlying problems must be addressed in the medium and long-term or the increasing cost trends will resurface;
b. there must be a reduction of legal processes and shift to more efficient expeditious and less costly dispute resolution;
c. there should be elimination of dispute through the system replaced by assured injury benefits; and
d. there needs to be re-focus on better health outcomes, simplified fair processes and improved driving behavior.

The *KPMG report* predicted that the era of tort in automobile insurance was nearing its end because the price of maintaining the current adversarial system is substantial premium increases, which takes a growing share of personal and collective social wealth, combined with unpredictable and unfair awards. Solicitor/client costs on a contingency basis up to 33 1/3 percent make this a major cost component in the current process. No-fault models can replace the costly and lengthy tort benefits with well-defined and controlled compensation through a tightly managed administrative process, protection and in shifting the focus to better health outcomes provided it preserves justice, fairness and equity.

The *KPMG report* also mentioned lessons learned from other jurisdictions including:

a. government-imposed rate freezes focus public attention on the issues of rising costs and the suffering manifested in those costs but are not a solution;
b. maintaining the status quo for compensation models like BC are not feasible;
c. failures of threshold no-fault systems are usually due to a tort threshold that does not adequately restrict the right to sue or lack of balance between the tort threshold and no-fault benefits for wage loss or medical care; and
d. no-fault models must have strong administrative controls on personal injury benefits and emphasize early, effective rehabilitation.

## Saskatchewan (1988-1995)

Between 1988 and 1993 the Saskatchewan Government Insurance Company observed almost 40% of the claims dollar was allocated to bodily injury claims. It set up an Injury Study Advisory Board with the objectives of:

a. improving and updating benefits and coverage; and
b. realigning priorities to place medical and vocational rehabilitation first, loss of income next, then pain and suffering and addressing the injury crisis.

It was seen that bodily injury claims costs were continuing to increase above the rate of inflation. There was pressure to increase premium rates and the Rate Stabilization Fund

was depleted. In the year ending December 31, 1994, the Auto Fund had a loss of nearly $94 million and accumulated deficit of $105 million.

To address escalating cost of tort awards to traffic injured in 1995, Saskatchewan abolished fault-based indemnification subject to one exception whereby the right to take legal action for economic loss was maintained for traffic injured whose gross earnings exceed $50,000 per year. The Saskatchewan Auto Fund provided a Personal Injury Protection Plan similar to that of Manitoba. The benefits were indexed to the Consumer Price Index.

After implementation of the Personal Injury Protection Plan, the number of personal injury claims declined by 30%. Personal injury claims costs declined by 48% or $108 million. The tort remedy was further restricted by a 90% of net income limit. It is thought that the change to this compensation model was the major factor to explain the savings.

### *Ernst & Young review of the New South Wales motor accident scheme for the board of Motor Accident Authority* (November 1998)

Against the backdrop of public dissatisfaction over record high premiums in the Australian state of New South Wales, its Motor Accidents Authority ("MAA") commissioned *Ernst & Young* (*E&Y*) to conduct a comprehensive review of the existing automobile insurance situation. *E&Y* reported that the claims costs were rising at a much higher rate than was the Consumer Price Index with no reason to believe that this unsatisfactory claims cost change rate trend would end. It said the state of affairs was not acceptable to the community or private insurers who underwrite the business.

The *E&Y report* concluded that the compensation benefits were not fairly distributed among automobile accident victims. Persons with severe injuries did not receive adequate sums to fund future care and those with non-severe injuries received more than they needed. Approximately 50% of the schemes resources were diverted to service providers involved in the determination of benefits eligibility. Future changes had to address the scheme's cost structure and a more equitable distribution of benefits.

### New South Wales motor accident reform created and enacted in 1999

In December 1988 the MAA decided to investigate consensus for change which resulted in the creation of a working party whose recommendations led to the enactment of the *Motor Accident Compensation Act* 1999. (1999 NSW model)

The working party consisted of 16 persons, including two physicians, two rehabilitation health professionals, four insurance industry experts, four senior legal practitioners, two actuaries, the Attorney General's Director, and the General Manager of MAA. It conducted its work without any external involvement or input, except the facilitation by seconded Canadian legal counsel to the AAIB.

The group began its work in March 1999 and by early April presented by unanimous agreement an initial blueprint of reforms to the government Minister responsible for auto insurance reform, indicating the group could endorse the reform to its various constituents if the provisions were not altered by legislative process.

The original Motor Accidents bill was introduced into the Upper House of Parliament at the beginning of June and the legislation, with some

amendments, was passed by both Houses by July 1, 1999. On October 5, 1999 the new scheme was operative.

The reform occurred over the objection of the NSW Law Society and Bar Association whose members opposed the restriction of the rights of traffic injured victims to have the monetary value of their pain and suffering judicially determined. It occurred further without extensive evidence that the awards for pain and suffering were too high for NSW traffic victims or that the awards did not effectively console injured persons or that the price of the average automobile insurance premium was too high. An account of this working group/negotiated reform process may be found at (2000) *Insurance Law Journal 1*. (NSW)

The reforms under the 1999 NSW model are summarized as follows:

a. The focus was away from simply paying compensation for injuries and toward providing better, earlier health treatment. The new law streamlined the medical treatment process by introducing standardized medical treatment and a medical review panel to provide final determination of medical impairments and binding assessments of permanent impairment.
b. A dispute resolution panel was introduced to determine all remaining issues relating to work capacity and economic losses which decisions would be binding on the insurer. This was a major transformation in introducing an objective assessment of impairment as a gateway for economic loss.
c. While the model preserved the right of the claimant to appeal the dispute panel decision to the court, the intention was to deter further disputation by providing the disincentive of a legal costs penalty if the appeal was unsuccessful.
d. To produce the necessary reduction in costs, the model prohibited amounts payable for non-pecuniary general damages unless the injured person had a greater than 10% permanent impairment as defined by the American Medical Association guidelines.
e. Further refinements were added including maximum tariffs for legal and medical fees and advertising restrictions.

Once implemented, the reform was accepted by the public and most service providers, particularly health professionals. It also reduced and flattened premium levels. One study of health outcomes indicated traffic injured recovered more quickly after the reform was implemented and concluded the legislative reform was responsible. More detailed discussion appears in the Review of Health Outcomes Evidence in Section VI of this Report.

## Elective/Choice model – Saskatchewan 2003

In Saskatchewan, an elective/choice model was implemented effective January 2003.

The theory of the elective/choice model (choice model) is that it permits the prospective insured motorist a choice between receiving speedy compensation for economic and medical costs on a no-fault basis and waiving the right to tort claims, or waiving the no-fault benefits and pursuing possible tort claims for the full measure of damages.

The operation of the choice model intends that where two people with no-fault insurance collide with each other, each seeks recovery for the losses from their own insurer. If two people with third-party coverage collide, they would proceed just as they do under a tort system. If a person with no-fault insurance collides with someone with third-party insurance, the first person claims losses from their insurer and is

not liable for the other person's losses, even if the first person was negligent. The second person has a tort claim against her own insurer if negligence on the part of the first driver could be proven. This claim would be much like tort claims against an uninsured motorist.

Some commentators have opined the choice by consumers under this model might be influenced by cost, such that low income and elderly consumers might choose the no-fault option because they are insuring lower than average perspective income losses. For example, when the state of Kentucky introduced the choice model in the 1970s, it became a de facto no-fault state. Commentators also opined that high-risk drivers and drivers and heavy vehicles might strategically select the no-fault option to insulate themselves from liability and coverage cost to negligently injured third parties.

The American states of New Jersey and Pennsylvania implemented very similar choice models in 1989 and 1990. Prior to the reform, New Jersey had a no-fault model whereas Pennsylvania had a tort model. A subsequent study of these choice models on outcomes such as less attorney usage, speedier time to payment and more consistent (equity) payments found higher insurance costs in both New Jersey and Pennsylvania.

A later study however showed that between 1990 and 1998 auto insurance premiums in Pennsylvania declined after about 44% of the insured population had chosen the no-fault option. It appeared that the factors that led choosing the no-fault option included price savings, household income, traffic density and political party preference. It found that males and households with increasing income were more likely to choose the no-fault option whereas increases in traffic density and attorney influence led to more full tort choice.

The *KPMG report* expressed the opinion that choice models are fraught with administrative difficulties of questions, in cases for example where the traffic injured never have the chance to make a choice, such as pedestrians, occupants of vehicles or dependents of non-automobile owners. It pointed to another difficulty in the method by which to appropriately allocate costs when an accident occurs between a tort policyholder and a no-fault policyholder. It said on balance, the systems have not been effective in health treatment or cost control.

In Saskatchewan at present, an injured claimant may have access to over $7 million in medical benefits for the claimant's lifetime, if necessary. Reportedly, no claimant has yet ever reached the maximum benefits available. SGI is said to be considering removing the upper limit on available for treatment, as actuarily it would have no impact on current automobile insurance rates. However, it has also been recently reported that only 0.05% of Saskatchewan motorist have opted for the tort option. It is unclear whether this is a rejection of tort or a rejection of the elective/choice model.

## Auto insurance reform in Alberta 2003

In 2000, the Government of Alberta again became concerned that mandatory auto premiums were becoming unaffordable or unavailable. This led to a review of auto insurance and other interrelated issues such as fairness of risk classifications, claims cost pressures, adequacy of Section B benefits, ability of traffic injured, especially soft tissue injured, to access effective treatments and traffic safety initiatives to reduce injuries. The review resulted in the enactment of the *Insurance Amendment Act* No.2, S.A. 2003, c 40 (and Regulations). A detailed review of the reform process and the subsequent court

challenge is discussed in the Chronology of Alberta Auto Insurance Reform at Section IV (C) of this Report.

The Regulations established:

a. capped damage awards for certain injuries;
b. diagnostic and treatment protocols to improve recovery times for certain injuries.
c. increased Section B benefit limits to $50,000;
d. improved access to Section B benefits;
e. an insurance premium Grid to base premiums and driving records rather than age, gender and marital status;
f. an all comers' rule, with some exceptions;
g. a strengthened role of the Automobile Insurance Rate Board; and
h. a mechanism for premium rate dispute resolution.

The diagnostic and treatment protocols apply to sprains, strains and WAD (Whiplash-Associated Disorder) I and II injuries. The protocols authorize payment for injuries by their healthcare providers. The reforms were multifaceted, and were carefully balanced. It was explained that subsequently altering one component could render the entire program unfeasible.

The maximum premium Grid caps premiums. Insurers must compare their market premium to the Grid premium in charging a consumer, and if it is lower than the Grid, it must charge its market rate. About 80% of drivers are charged premiums lower than the Grid. About 20%, poor risks, drivers with poor driving records, or inexperienced drivers are charged premiums capped by the Grid.

There is no traditional risk sharing pool for private passenger risks. Insurers can cede policies into a Grid or a non-grid pool. The new Automobile Insurance Rate Board can now adjust premiums annually by comparing total premiums to industry wide loss costs, administrative and other relevant expenses. This ensures that industrywide costs are accounted for in premiums and industry wide savings are accounted to the consumer.

### *Report of the Atlantic Canada Insurance Harmonization Task Force* (2003)

In 2003 the Council of Atlantic Premiers appointed a Task Force to undertake a comprehensive study of the full cost/benefit and legal implications of establishing an Atlantic Canada public automobile insurance system. The September 30, 2003 *Report of the Atlantic Canada Insurance Harmonization Task Force* (the *Atlantic Report*) included a report on alternative automobile insurance systems ranging in design from the pure tort model to the pure no-fault model, with various alternative models in between.

The Task Force interpreted its mandate to identify the most reasonable package of basic compulsory automobile insurance that best balanced the needs of both motorists and the traffic injured of Atlantic Canada. Those needs were interpreted to include the features of affordability and availability of basic compulsory insurance and reasonable compensation of those injured in automobile accidents.

The Task Force reviewed the findings of the 1968 *Wooten Report* in British Columbia, the 1988 *Kopstein Report* in Manitoba, the 1974 *Gauvin Report* of Québec, the 1988 *Osborne Report* in Ontario, the 1991 *AAIB Report* and the 1996 *KPMG report* in British Columbia. It also examined the auto insurance models in the Australian states of New South Wales, Queensland and Victoria.

The Task Force concluded that the evidence overwhelmingly supported the conclusion that the primary long-term and core solution to the problem of rising automobile insurance rates requires reform of the characteristics of the product and its design features.

The Task Force found that the core problem of increases in premiums has been consistently identified as the increase in bodily injury loss costs resulting from the tort elements of the auto compensation system.

The *Atlantic Report* identified two real issues: how the majority of traffic injured can come to terms with reasonable reduction of their compensation so that Atlantic Canadians can afford the cost of basic mandatory automobile insurance and how motorists can come to accept realistic and reasonable cost of insurance to pay for the injuries caused by the insured motorists. (*Atlantic Report* 5)

The *Atlantic Report* proposed that the resolution required recognition of the need to reduce the tort components as far as possible while maintaining the appropriate balance between the cost of premiums and the necessity of reasonable compensation.

## Nova Scotia – 2003

As reported in the court challenge in the ***Hartling*** decision (discussed more fully in Section V (C) of this Report), in 2003 Nova Scotia motorists found themselves paying more and more for mandatory insurance coverage, and the Nova Scotia regulator concluded that:

a. premium increases are to be expected as long as the existing automobile insurance system in Nova Scotia remains;
b. the major reason is the increasing cost of claims;
c. the primary cause is claims for compensation for bodily injuries;
d. third party liability claim costs have been increasing much faster than collision and comprehensive claim costs;
e. the increase in the average cost of a bodily injury claim over the last five years had been dramatic; and
f. automobile insurers have been taking drastic rate action to restore profitability.

The Nova Scotia legislature proposed a reform that would implement a limit or "cap" upon all non-pecuniary general damage claims, except for the most serious permanent injuries. Through a legislative compromise that initial proposal was narrowed down to impact only a small group of traffic injured.

With a legislative compromise established, the government amended the *Insurance Act* to include a definition of "minor injury", together the term "serious impairment". The operative provisions set by regulation confirmed that the cap would be $2,500 and that certain listed injuries, including chronic pain, would be excluded from its application.

Although that legislation was later subjected to a legislative Charter challenge in ***Hartling***, it was upheld at the trial and appellate levels of the Nova Scotia courts.

## Newfoundland and Labrador, New Brunswick and Prince Edward Island

In 2004 these provinces legislated a deductible of $2,500 for pain and suffering tort awards for minor injuries.

## Ontario – implemented periodic reforms to the threshold/ no-fault model

In 2003, the Ontario government introduced further refinements to the maximum fee schedules for providers of health care and the requirement to submit treatment plans for approval by insurers which had been initially based on a negotiated agreement between providers and the insurance industry.

Later in 2003, a new government introduced legislation to temporarily freeze auto insurance rates and set an objective to reduce auto insurance rates by 10 per cent.

In 2006, the government eliminated the Designated Assessment Centres (DAC) system and reverted to resolving accident benefits disputes through insurer examination assessors.

In 2010, the government introduced further substantial reforms including changing benefits under the standard accident benefits coverage, a series of reforms to try to control costs, exploring the use of evidence-based treatment plans, capping the cost of medical assessments, capping the maximum benefit for a minor injury and other measures. Later the government introduced many of the recommendations of the Ontario Auto Insurance Anti-Fraud Task Force.

The 2017 *Marshall Report* concluded that all these previous periodic attempts at reform to alleviate the problems amounted to only ineffective tinkering.

## Territories

North West Territories and the Yukon impose no constraints on claims for pain and suffering damages.

## New South Wales: Introduction of no-fault long term care for catastrophically injured 2006-2007

In 2005 the New South Wales government determined that the 1999 auto insurance reform had led to a stable and affordable scheme which made it possible to expand coverage to all catastrophically injured persons whether they could prove fault or not.

The New South Wales government identified that about 125 people were catastrophically injured annually in New South Wales. They had significant daily needs including care, personal assistance, domestic support and an ongoing equipment and medical needs. It proposed a scheme Long Term Care and Support (LTCS) that would provide:

a. medical treatment;
b. acute inpatient care;
c. rehabilitation;
d. specialist and expert medical care; and
e. pharmaceutical expenses for life.

The long term care program would appoint a lifetime care coordinator to work with the person in the person's family. The coordinator would focus on helping the person adjust to the disability and help them regain as much daily function and independence as possible. It would also identify options for accommodation, transport, education, employment, social and recreational activity. In the acute care and rehabilitation phase, they would be working with the injured person to help develop rehabilitation and community participation plans that identify short and long-term goals consistent with desire.

The coordinator would also help the injured person and their family develop a community participation plan to enable the person to access all available activities and opportunities. The long-term planning process would include:

a. specific goals of the injured person including educational social and employment;
b. services and support required including identifying any specific skills;
c. time frames;
d. specific service entry exit and transitional strategies;
e. roles and responsibilities of those involved and support;
f. agreed review date to assess the adequacy of the plan; and
g. support for carers.

Following the rehabilitation towards discharge, the life care coordinator would help the person and family focus on living with their disability and identify their ongoing support needs. Following discharge the scheme would typically provide daily services as required, such as:

a. aids and appliances;
b. home and transport;
c. personal care;
d. domestic services;
e. childcare services;
f. nursing care;
g. assistance with community access;
h. educational and vocational services; and
i. respite care.

The program would provide lifetime care and support through a fully funded statutory trust. The government would also provide support, including medical costs, for the scheme.

An actuarial analysis estimated approximately 124 persons would be eligible to enter the scheme annually. This would include about 37 with spinal cord injury, 84 with traumatic brain injury, and three with other injuries, such as bilateral amputee, major internal injuries and severe burns.

Guidelines would establish the extent of the injury.

Standards would be developed for service providers covering a range of skills, training and experience. Care providers would be approved by the LTCS authority to ensure quality of service. The model of service delivery would as far as practicable give control of the selection of service providers and coordination of services to the injured person and or their family.

The government proposed to establish a board of the long term care program with authority that would:

a. oversee the fund, including its investment;
b. approve the guidelines for eligibility and care need assessment;
c. approve the assessor fee schedule; and
d. approve the care provider fee schedule.

An Advisory Council would be established including two practicing health professionals with relevant experience in treating persons with catastrophic injuries, consumer representatives from relevant disability organizations and care provider representatives. The Council would advise the minister and the government on the operation of the scheme.

The scheme would be fully funded through a levy on motorists collected in conjunction with motor accident insurance.

Funds paid into the scheme would be the full cost of providing lifetime care and medical treatment services to injured people. The pooling of the funds would protect against the possibility of poor estimation of an individual claimant.

For those eligible to enter the LTCS scheme, lump sums would no longer reflect compensation for future treatment lifetime care and domestic assistance performed on an unpaid basis, but would be provided through the scheme. Payments for damages for pain and suffering and economic loss would remain unchanged. In determining the levy, the LTCS Authority would rely on independent actuarial advice to ensure that the fully funded principle was maintained.

The NSW government obtained an actuarial no-fault long-term care costing study which gave a cost estimate based on the number of people injured in the 2005/2006 accident year.

The NSW government ultimately introduced on 1 October 2006 for children under 16 and on 1 October 2007 for adults the lifetime care and support scheme (icare) to improve the quality-of-life of the injured person and their family.

### *NSW MAA Report Why the NSW Green Slip Scheme needs to change* – 2013

A summary of the findings of the *NSW MAA* in 2013 is as follows:

a. The need to establish fault means the NSW CTP Scheme is essentially adversarial. By comparison, the Victorian CTP Scheme is no-fault and premiums are considerably less expensive.

b. Every year there are about 7,000 people who cannot access more than the first $5,000 of benefits because they cannot prove the fault of another party. Their care and recovery may be compromised, including drivers in single vehicle accidents.

c. To claim benefits, the injured person must lodge a claim with the insurer of the vehicle most at fault and provide the insurer with details of the accident, their injuries and losses.

d. Once all the details of the injury have been established, the insurer is required to make offer of settlement. There may be disputes over liability, the extent and cause of injury and the settlement amount.

e. The negotiation and dispute processes are often costly and protracted. In NSW, very little is paid to injured people in the first year after an accident. Only medical expenses are paid on the way. Generally, the majority of the compensation is paid out between three and five years after the accident. … funds are not received by injured people when they need it most and would be most effective in assisting with a quicker recovery. Many disputes will end up in a formal assessment process or in court, which is frequently very stressful for injured people, contributing to secondary injuries.

f. The continuing need to prove disability or incapacity perversely discourages quick recovery as this tends to equate to reduced payments, creating a lump-sum compensation mind-set.

g. Compensation can also be reduced if it is determined that the injured person was partially at fault in the accident. Many people take a long time to reach an agreement as to their future needs and entitlements, only to have this amount reduced because they were considered partly at fault. For many such people, their ongoing needs arising from injury are not met despite a protracted claiming process.

h. Many of the payments made by insurers, including medical assessments and legal costs, are not benefits to claimants.

i. Because of the complexity and adversarial nature of the scheme, …, many engage a lawyer to help them with their claim. The system deters unrepresented claimants.

j. Since 1999, more has been spent on lawyers in the NSW Scheme than on medical and related treatment costs (excluding care) for injured people. The complex system also dissuades many people from making a claim in the first place, with only around half the people who could make a claim actually doing so, while others may simply give up or give in during the process, perhaps receiving sub-optimal benefits.

k. Fault-based schemes can be said to help uphold the principles of justice and fairness, by providing compensation for the wrongdoings of others and withholding benefits from those at fault. Some believe that this provides an incentive for people to drive safely, however because risk is effectively contracted out to the insurance company, there is little evidence that the price of a Green Slip influences driver behaviour.

l. Instead, as case studies show, the complex technicalities of the current scheme lead to disputes and unnecessary costs and delays, which do not help the injured person but increase Green Slip premiums.

### *Fair Benefits Fairly Delivered: A Review of the Auto Insurance System in Ontario* April 11, 2017 by David Marshall

Mr. David Marshall (*Marshall*) was appointed in February 2016 to review and make recommendations as to improvements in the system of auto insurance in Ontario, noting that it was frequently criticized as having the most expensive auto insurance rates in the country.

*Marshall* was to advise on the development of further initiatives to reduce claims costs and uncertainty in Ontario's auto insurance system to focus on improving the efficiency and effectiveness of claims management in the system based on best practices in Ontario and other jurisdictions, coverage options, comparable systems, common traffic injuries, medical examinations and assessments, legal costs, dispute prevention, engagement and education and evidence-based treatment protocols.

*Marshall* analyzed the Ontario history of auto insurance reforms since 1990 as follows:

a. Before 1990, Ontario auto insurance operated largely as a tort system with minimal accident benefits on the no-fault side. The majority of accident victims were represented by lawyers.

b. In 1990, the government tried to shift the balance of compensation needs from the tort system to the no-fault accident benefits system. To save time and money, most compensation requirements were to be met through the accident benefits system with restrictions on what could be obtained through the tort system. The government also introduced a process of rate approvals and a system for dispute resolution outside the court process.

c. In 1994, the then government considerably expanded the accident benefits, extended the right to sue in tort for pain and suffering, but eliminated the right to sue in tort for economic damages.
d. In 1996, the government reintroduced the right to sue for economic damages but reduced the amount of coverage for medical and rehabilitation benefits under the accident benefits system. The government also introduced additional cost control measures, such as setting maximum fee schedules for providers of health care and the requirement to submit treatment plans for approval by insurers.
e. Later, in 2003, a new government introduced legislation to temporarily freeze auto insurance rates and set an objective to reduce rates by 10 per cent.
f. In 2006, the government eliminated the Designated Assessment Centres (DAC) system and reverted to insurer examination assessors to resolve disputes over accident benefits.
g. In 2010, the government introduced further changes, including:
    i. changing the standard accident benefits coverage;
    ii. presenting reforms to try to control costs;
    iii. exploring the use of evidence-based treatment plans;
    iv. capping the cost of medical assessments;
    v. capping the maximum benefit for a minor injury; and
    vi. other measures.
h. In June 2013, the government passed the *Prosperous and Fair Ontario Act*, which set out a target to reduce insurance premiums by 15 per cent over the next two years.
i. In 2015, the government introduced legislation impacting no-fault benefits, and in April 2016 a new dispute resolution system was introduced.

The government then acted upon recommendations of an expert advisory panel that undertook a review of the mandates of the Financial Services Commission of Ontario, the Financial Services Tribunal and the Deposit Insurance Corporation of Ontario (FSCO Mandate Review).

*Marshall* came to damning conclusions about the effects of this extensive history of auto insurance reform in Ontario as follows:

a. no-fault benefits had been increased and decreased;
b. access to tort has been increased and decreased;
c. cost control measures have been tried;
d. anti-fraud measures have been introduced;
e. freezing of insurance premiums has occurred;
f. a complete restructuring of the regulatory body has been undertaken;
g. following the past reform measures, costs and premiums have dropped for a few years and then begin to rise sharply to establish new highs;
h. although further changes in benefits were implemented in 2015 to curb costs, trends indicate that despite these changes' costs will once again rise;
i. while accident frequency has dropped, the cost of claims has consistently increased;
j. the road taken over 50 years to tinker with and adjust the system of auto insurance has fallen short in system innovation; and
k. there is clearly a need to structure the system so that it can be encouraged to innovate and change.

According to the *Marshall*:

a. The tort system is confrontational, time consuming, involves the cost of legal counsel and experts, and ties up negotiating time if settled out of court or court time if cases go to trial. Moreover, using the court system to get injured parties what they deserve results in a significant leakage in the benefit they actually receive since the award they get is reduced by the need to pay expert witnesses and large fees to lawyers.
b. The no-fault portion of the system is intended by many governments to provide most, if not all, essential needs of injured parties through a system that is more efficient, less costly and delivers more of the end benefit to the consumer than the tort system. Where the no-fault portion of the system is outsourced to the private sector, as in Ontario, the goals are challenging to meet. If not structured properly, this part of the system can start to mirror the tort system with its inevitable confrontation, costs and delays, which is what is happening in Ontario today.
c. It is important to remember that in the end, citizens who own vehicles pay, through their insurance premiums, for the full cost of the combined no-fault and tort systems, whichever way the system is structured.
d. It is also important to remember that not all injured persons have access to sue – only those who are not at fault. About 30 per cent of drivers who are involved in accidents are at fault which leaves this substantial proportion of injured persons out of the tort system and with access only to the basic no-fault coverage.
e. When the core entitlement decisions are readily determined by programs of care and neutral independent examiners, there should be little structural need for conventional litigation and a consequent improvement in both health outcomes, and the efficiency and cost of the system.

Of other specific concerns identified, *Marshall* noted that based on 2013 expenses, more than one dollar out of every four is not received by the accident victim in benefits; that is, $340 million is going to pay for competing medical opinions because insurers and claimants – or their lawyers – disagree on what is appropriate medical care, and another $100 million is going to lawyers' so that $4 billion in benefits, about $1.4 billion or some 35 per cent of the benefits costs are not going to accident victims which is undermining the integrity of the system and "the whole notion of getting benefits to deserving claimants quickly and inexpensively has been lost."

*Marshall* also observed as follows:

a. lawyer advertising having rapidly become "big business.";
b. the practice of obtaining clients through advertising then passing them onto other lawyers for a fee – in personal injury law have become unreasonable and disproportionate and, in many cases, clients are not sufficiently aware that they are being referred to another lawyer;
c. due to the high cost of acquiring cases, counsel might not be able to afford to spend adequate time with the client or be prepared to take the case to trial if necessary;
d. contingency fee pricing is not currently sufficiently transparent at the outset to consumers. In the personal injury market, the fee that a prospective client can expect to ultimately be charged often remains opaque, and it is difficult to determine whether a competitive fee structure is being proposed;

e. one area of particular concern is the reported practice by some lawyers of double dipping, which is, keeping part of the legal costs awarded to clients or charging their contingency fee on top of the legal costs. Keeping the disbursements and other practices not fully explained to the client up front are … potentially questionable; and
f. clients often suffer financial hardship. To meet this need, specialized firms called settlement loan companies step into the picture and provide bridge loans to auto insurance claimants ranging from an estimated $500 to $50,000 at high interest rates. There is very little transparency on who owns these settlement loan companies, how they obtain their financing and who refers clients to them.

*Marshall* concluded there should be very little, if any reason to have to hire a lawyer or resort to a finance company to provide a bridge loan, especially in cases where there are minor injuries.

*Marshall* noted that trying to estimate the care and other benefits needed in the future leads to lengthy negotiations over amounts which may or may not ever be put to the uses estimated. It also introduces professional negotiating via lawyers, which can result in a large dose of exaggeration and gamesmanship on both sides in an attempt to figure out what the other party is likely to settle for, not necessarily what the claimant actually needs. As long as there is a prospect of a lump-sum payment at the end of a process, injured parties may be advised to boost a claim in order to maximize the size of the payment. This does not serve either the injured person well (boosting a claim requires spending money on expert opinions and lengthening the time of disability) nor does it serve the system as a whole since added costs which are not necessary increases the cost of insurance for all participants.

To avoid this situation a major cultural shift needs to occur. … A claim should be handled on its merits. If health care is needed it should be provided either through the programs of care mentioned above or through the diagnosis and treatment recommended by the independent examiner –within the dollar and time limits of the policy.

With respect to the impact of removing a cash incentive, the study by *Dr. David Cassidy et al*. reported that when the Province of Saskatchewan changed its auto insurance system from a tort system where all compensation was given in cash vs. treatment to a no-fault system where treatment was provided instead of cash, the Saskatchewan system experienced a 28 per cent reduction in whiplash claims. Median time to closure of whiplash claims came down from 433 days to about 200 days. …a decision to make a whiplash claim could involve factors beyond actual medical need and include a prospect of financial gain.

Experience within the worker's compensation system shows that the majority of claimants, once they have recovered from their injury do not need further care and do not come back for more treatment. Those that do, account for a fairly small proportion. The actuaries will quickly adapt to the rate of recurrence and are able to advise management as to how much capital to set aside for this eventuality. This is also the process followed by the Québec auto insurance system which has demonstrated that their costs are the lowest in Canada.

A summary of *Marshall's* key findings are as follows:

a. the goals of all the principal stakeholders are not well aligned. As a result, the government's goal ... is being undermined;

b. claims appear to be unusually expensive, are taking too long to resolve, and too many accident victims are suffering a permanent serious impairment from what began as soft tissue injuries;
c. the system is open to inefficiency, excessive cost and over treatment;
d. expenditures are not going directly to the benefit of claimants (which) is threatening the very foundation of the system;
e. a major element of delay and extra cost is caused by the inability of parties to agree on an appropriate diagnosis and treatment of the injury. It has become a system that is largely focused on cash rather than care. ... The outcomes are not only more expensive but worse for injured parties;
f. legal representatives are charging claimants contingency fees as high as 30 or 35 per cent which is money out of the pockets of claimants who need these funds to replace lost income and pay for treatment;
g. disputes and settlements need to be focused on getting claimants timely access to necessary treatment and assessments;
h. catastrophically injured persons' needs change as they age; and
i. it is necessary and essential to find a better way to resolve the issue of how to efficiently diagnose and treat injuries under the no-fault system.

## British Columbia – 1983-2020

Accident benefits were first introduced in 1969. Following recommendations of an Automobile Accident Compensation Committee in British Columbia in 1983, Part 7 of the *Insurance (Vehicle) Regulation*, BC Reg 447/83 was enacted. Since 1983 some sections have been amended several times over the years, other sections have been repealed and in certain years no amendments were made.

Amendments were made yearly between 1984 and 1995, with respect to coverage, medical or rehabilitation benefits, medical examinations, provisions to terminate benefits, for refusal to undergo treatment or training, employment during disability, medical examinations and medical certificates. Further amendments were made in 1997 and 1998. No amendments were made between 1999 and 2005. Amendments were made again in 2006, 2008, and 2010. No amendments were made between 2011 and 2017. In 2018 and 2019 numerous amendments were made.

In early 2020, the Government of British Columbia announced an intention to convert the automobile compensation system to a pure no-fault model. No legislation has been presented to the date of writing of this Report.

## B. Analysis of Auto Insurance Reform Studies and Legislative Alternative Models

### 1946-1978

The Committee found significant the consistency in conclusions drawn by the studies of auto insurance reform in five Canadian provinces between 1946 and 1988 which uniformly recommended elimination of tort and replacement with a no-fault insurance model to provide compensation for all traffic injured. These findings are listed below with our emphasis noting the bold verdicts against the tort model:

a. Saskatchewan 1946 *Report on the Problem of Compensation for Victims of Automobile Accidents* recommended compensation for injury or accident regardless of fault;
b. British Columbia *Wooten Report* 1968, **"the fault system cannot adequately protect the general public insofar as the automobile accident is concerned…and by a system of no-fault cover aided by other factors the motorist and the general public would be better served."**;
c. Québec *Gauvin Report* 1974, **"partial tort reforms were compromises and half measures which were not acceptable because the compensation was inadequate for those in the greatest need and so the fault concept must be completely abolished."**;
d. Ontario Slater Report 1986, **"tort system was not defensible in theory or in practice and will only deepen the incoherence, instability and continuing unpredictability and instead personally injured traffic victims would be better served under a pure no (fault) system."**; and
e. Manitoba *Kopstein Report* 1988, **"tort concepts provided inequitable results for injured persons."** It recommended a pure no-fault compensation similar to that of Québec.

The Committee also found significant the fact that despite the consistent conclusion found after extensive study on each occasion between 1946 and 1988, most provinces resisted acting on those findings and recommendations.

### 1946 Introduction of no-fault benefits: Saskatchewan

Although the province of Saskatchewan was the first province to take the then revolutionary step in 1946 of introducing no-fault accident benefits for traffic injured that could not secure monetary recovery in tort, no-fault benefits were not adopted in any other Canadian province for more than 20 years.

The gradual introduction in around 1970 of a no-fault benefits component alongside a tort component in Ontario and Alberta was likely recognized by private enterprise auto insurance models as necessary to mitigate the harshness of the tort requirement of proof of causation by a negligent driver which deprive many traffic injured of any recovery for losses resulting from accidents. It also presented the attractive prospect of brokering a blended compromise that would take into account all competing interests.

## 1978 Introduction of pure no-fault model: Québec

As noted, Québec was the first province to respond to the problem to escalating auto premiums by eventually adopting the initial recommendations of a commissioned report issued in 1974 by eliminating tort altogether. When it enacted legislation in 1978 in line with the recommendations, it became the first pure no-fault accident compensation model of its kind in North America.

Although there was significant resistance to the original reform proposal from many sectors of the public which delayed the enactment of the legislation by several years, auto insurance premiums remained stable in Québec since that time, are reportedly the lowest in Canada and since1978, there have been no public calls for a restoration of tort remedies.

Despite its discernable success in attaining affordability and long term premium stability, no other provincial government adopted a pure no-fault accident compensation model for a further 14 years.

## 1978 expansion of tort remedies: The Supreme Court of Canada Trilogy

As may be well-known, in 1978 the Supreme Court of Canada (the Court) decided three personal injury cases which have become known as the Trilogy to set out clear and consistent principles to govern awards of damages in severe personal injury cases. The Court formulated guidelines for compensation for future care costs and loss of earnings capacity as well as to explain the purpose of awards for non-pecuniary damages which involved consideration of such factors as pain and suffering, loss of amenities and loss of expectation of life.

The Court held that if an injured person is properly provided for in terms of future care, large amounts should not be awarded for non-pecuniary damages, which should serve the function of making life more enjoyable for the disabled person above and beyond awards directly related to the injuries involved. One reason given by the Court for “capping” the non-pecuniary damage awards for catastrophically injured was recognition that insurance could not respond to unlimited general damage awards.

However, one consequence of the Trilogy became a more intensified focus on the pursuit of pecuniary loss claims of traffic injured in the tort system. Over the next decade, other statutory and common-law developments increased the number of people entitled to compensation, new rights of compensation have been created and higher awards have resulted which, in turn, have led to increased automobile insurance premium levels.

## 1986-1996

### 1986-1990 Introduction of threshold/ no-fault model: Ontario

The consequences of the Trilogy in impacting tort awards between 1978 and 1990 may have contributed to the decision of the Ontario government to transform its then existing maximum tort/minimum no-fault hybrid model to a model that strictly restricted tort rights but substituted enhanced no-fault benefits.

The transformation of the accident compensation model in Ontario had a fraught four year journey, as was the case in Québec, although the opposition was manifested in different forms with different consequences. In Ontario there were two comprehensive auto insurance reform inquiries undertaken in rapid succession both of which reflected extensive consultations with many affected parties.

First, the desire of the Ontario government to implement a pure no-fault model in line with the *Slater Report* of 1986 was unmet. Equally, the *Osborne Report*'s proposal to implement a modified threshold plan capping pecuniary damages for minor injuries was unmet.

The eventual solution, known as the Ontario Motorist Protection Plan (OMPP), dramatically restricted the right to sue for most traffic injured, allowing such right only to those permanently and severely injured. However, in exchange it enacted substantially enhanced no-fault benefits. OMPP was enacted into law without first achieving a broad majority consensus of the Ontario motoring public and soon after became the subject of a legal challenge.

In a 1992 ruling a Judge of the Ontario Superior court upheld the OMPP, explaining that this legislation did not deprive individuals of tort rights, because it exchanged their rights of action with a right to comprehensive no-fault benefits. Of interest, no appeal was taken from that decision, which has been since cited in later similar cases at higher court levels.

While it was initially expected that OMPP would effectively calibrate and balance the costs and benefits of the automobile compensation system so that Ontario motorists could expect flattening of premium levels, unintended consequences unfolding over time prevented attainment of that goal.

OMPP, after surviving a legal challenge, likely produced an extended expectation in Ontario and in other provinces which maintained private enterprise delivery systems, that reasonable balances between tort and no-fault components could be carefully calibrated to solve the problems of unavailability, unaffordability and instability in auto insurance premium levels.

However, against the Ontario trend premium increase problems in Manitoba and Saskatchewan were producing different developments in response to increased bodily injury loss costs.

### 1991 Recommendation for gradual tort reform: Alberta

In 1991 the *AAIB report*, after identifying causes for increasing premiums as increased bodily injury loss costs, particularly for non-pecuniary damages, recommended for premium stability modest tort reform in the short term and a threshold/no-fault model in the long term.

At the time the rate board (AAIB) conducted consultations with Osborne which likely informed the AAIB's decision to reject the pure no-fault model, despite its proven advantages, and to prefer the belief that reasonable balances

between tort and no-fault could solve the problems of unavailability, affordability and long-term instability in the auto insurance premium levels.

The AAIB recommendations produced strong opposition from the Alberta section of the Canadian Bar Association. In the event, no government action was taken to implement any of the AAIB recommendations.

### 1988-1994 Introduction of pure no-fault: Manitoba

While Ontario was undergoing a lengthy reform process, a commission led by a Manitoba jurist produced a report recommending abolishing the tort model in place of a pure no-fault model similar to that of Québec.

The tort-based model was replaced entirely with modest no-fault benefits in order to head off large increases in bodily injury claims costs by way of legislation enacted in 1994 (Personal Injury Protection Plan). This change occurred in Manitoba without evident protracted controversy or opposition. The *KPMG report* said the Personal Injury Protection Plan reduced the number of injury claims and produced a net reduction in premium of 34% in the first two years. From all reports, auto insurance premiums remained stable over the long term, and there have been no public calls from Manitobans from 1994 onward for a restoration of tort remedies.

### 1988-1995 Introduction of pure no-fault: Saskatchewan

After observing from 1988 to 1993 that almost 40% of the claims dollar was allocated to bodily injury claims in 1995 the Saskatchewan government took action to implement a no-fault plan similar to that of Manitoba but preserving a right to sue where a not at-fault claimant had economic damages exceeding the benefits provided under the plan. The tort remedy was further restricted by a 90% of net income limit.

### 1990-1996 Continuous modifications to threshold/no-fault: Ontario

In the mid 1990s problems began to emerge with the Ontario threshold/no-fault model (as described by *Marshall* in 2017), resulting in a series of modifications.

In 1994, the government considerably expanded the benefits under the accident benefits side of the system, extended the right to sue under tort for pain and suffering, but eliminated the right to sue under tort for economic damages.

In 1996, the government reintroduced the right to sue for economic damages but reduced the amount of coverage for medical and rehabilitation benefits under the accident benefits side of the system. It also introduced additional cost control measures, such as setting maximum fee schedules for providers of health care and the requirement to submit treatment plans for approval by insurance companies.

These various attempts to save costs by calibrating and recalibrating the balance of tort and no-fault components in the system were judged by *Marshall* to be unsuccessful in the long term.

## 1996-2003

### 1996 *KPMG Report Recommending No-Fault model*: British Columbia

In about 1995 British Columbia motorists were reporting premiums were too costly. The 1996 *KPMG Report* provided a deep insight into the British Columbia trends of premium cost increases from 1986 to 1996 which mirrored the rising premium trends in other provinces in the same interval.

The *KPMG Report* was blunt in its conclusions and recommendations in condemning the tort component of the traffic accident compensation system. Most revealing in its cost breakdown of ICBC dollars from 1995 data was the breakdown of actual legal costs due to the tort component totalling $223 million in 1995. The ability to identify precise legal costs in a government monopoly system is a clear advantage over private enterprise insurance models.

The *KPMG Report* concluded that only by changing the design of the insurance product could costs in auto insurance be brought under control and that tinkering with or fine-tuning the product would not be sufficient.

The *KPMG Report* also concluded that preserving a right of action in tort eroded the economics of the system and created an intolerable financial burden on policyholders. This was particularly so when measured against the deficiencies in the system such as long delays and certainty about adequacy of compensation and rehabilitation, potential for exaggeration of claims and the high legal investigative costs to establish claims worked against the recovery of the traffic injured.

The *KPMG report* predicted that the era of tort in automobile insurance is nearing its end whereas no-fault models can replace the costly and lengthy tort benefits with well-defined and controlled compensation through a tightly managed administrative process, protection and in shifting the focus to better health outcomes provided it preserves justice, fairness and equity.

These conclusions were compelling because they came from detailed study and analysis by actuaries and accountants who did not have the same type of vested interest in the auto insurance compensation system as other tort service providers. They also bore a strong resemblance to the criticisms levelled in other jurisdictions in other time intervals, such as in reports of *Ernst & Young* in Australia in 1999 and *Marshall* in Ontario in 2017.

### 1999 New South Wales, Australia

The 1999 motor accident reform in New South Wales was a response to public dissatisfaction with record high premiums. Its model introduced a shift away from money compensation for injuries and to standardized medical treatment. The model included a threshold for nonpecuniary general damages defined as more than 10% permanent impairment based on American Medical Association guidelines. This was intended to target premium cost reductions.

Another transformation in the 1999 reform was to legislate the determination of key issues such as medical impairment, work capacity and economic losses by expert panels rather than litigation. While the model preserved the right to appeal dispute panel decisions to court it intended to deter the frequency of appeals through a cost penalty for unsuccessful

appeals. As was proven in subsequent years, the concession to the adversarial process would eventually prove to have been counterproductive.

### Summary of Results

What was clear from the history of all the various jurisdictions examined was that automobile insurance premium levels were increasing continuously at a rate motorists from the mid 1980s to the mid 1990s were reporting as unaffordable and unacceptable, and not only in Canadian provinces but elsewhere. All indications were that the main cause in all jurisdictions was bodily injury loss costs escalating and exceeding high rates of inflation and the Consumer Price Index.

The studies continuously recommended elimination or severe restriction of the tort component, and in Manitoba and Saskatchewan where the recommendations were accepted, public dissatisfaction has been quelled. In jurisdictions where the tort component was maintained, the pricing problems continued and the remedies implemented, if effective at all, were only so in the short term.

The enduring problems for the Ontario government since the 1990 reform have been vividly recounted in the *Marshall report*. In the same interval, the premium instability problems in Alberta and British Columbia, where no auto insurance reform was undertaken, other than increases to accident benefits, continued through the next two decades.

### 2003 Saskatchewan Introduction of Choice Model

In Saskatchewan a choice model was implemented effective January 2003. The Committee was unable to locate the history behind the decision to transition from the nearly pure no-fault model which had functioned from 1995 to 2003 without apparent reported systemic problems.

It is the Committee's understanding that motorists who have previously elected the no-fault option continue to have the no-fault product as their election, unless they take active steps to opt out of their previously selected option. Since the operation of the choice model from 2003 to the present, there has apparently been very little take up of the tort option by Saskatchewan motorists over the period from 2003-2019 (reportedly currently to be around 0.5%).

The choice model may seem at first blush as a unique and desirable model as it places the decision as to the type of compensation coverage to purchase in the hands of motorists. However, since in the Committee's view the Saskatchewan experience since 2003 has in effect been a de facto nearly pure no-fault model, it does not provide reliable evidence as to whether and how it would perform in a private enterprise insurance delivery system.

Some commentators consider the choice by consumers might be influenced by cost, such that low income and elderly consumers might choose the no-fault option because they are insuring lower than average prospective income losses. The *KPMG report* concluded that on balance this model was not effective in health treatment or cost control.

The AAIB recommended that a choice model be considered after an enhanced benefits model and before a threshold model had been tried out. However, as will be discussed in Section IV (C) of this Report, the choice model was considered and rejected in 2003. In the *Morrow* decision, the then current tort/no-fault system in Alberta was categorized as a threshold no-fault model, which was unsuccessful in controlling escalating bodily injury loss costs in the long term. It would then follow according to the AAIB recommendations, that the next model to be considered would be that of pure no-fault.

The Committee concluded that the Saskatchewan choice model is anomalous in relation to all the other automobile insurance reform experiences in Canadian provinces. That is not of itself sufficient reason to reject it. However, if as the Committee concludes, retaining a tort component cannot be defended on its own merits, then retaining it under a choice model would be equally indefensible.

In addition, the Committee is concerned that the choice models create a significant risk that many motorists, especially young and new drivers, will select the option that costs the least instead of making informed choices at the time of purchasing auto insurance. The Committee is concerned that many motorists under such a model would regret their choice if they were injured in a traffic accident and unable to recover the benefits and compensation that would have been available if they had made the opposite election. In the result, the Committee rejects the choice model because it would perpetuate the same deficiencies currently found in the tort system, with the same adverse consequences to traffic injured and the motoring public.

## 2003 Introduced caps to non-pecuniary damages for minor injuries: Alberta

In 2000 concerns that mandatory auto premiums were becoming unaffordable or unavailable led the GOA to review auto insurance issues including fairness of risk classifications, claims cost pressures, adequacy of Section B benefits, ability of traffic injured, especially soft tissue injured to access effective treatments and traffic safety initiatives to reduce injuries.

In the initial stage of reform, the proposed cap was to apply to claims for non-pecuniary damages for all except the permanent and catastrophically injured. Through the course of the legislative process, including consultations and responses to public concerns, the scope of traffic injured to be included under the cap was substantially reduced.

A detailed review of the reform process and the subsequent court challenge concluded in 2009 is discussed in the review of the history of Alberta auto insurance reform under Section IV (C) of this Report. In that discussion it will be seen that the reform package did not produce long-term stability in auto insurance premium levels in Alberta.

## 2003 Investigation of auto insurance reform: Atlantic Canada

The Atlantic Canada Insurance Harmonization Task Force (Task Force) found that the core problem of increases in premiums has been consistently identified as the increase in bodily injury loss costs. The *Task Force Report* proposed that product reforms in those jurisdictions must reduce the tort components as far as possible while maintaining the appropriate balance between the cost of premiums and the necessity of reasonable compensation.

## 2003 Introduced caps to non-pecuniary damages for minor injuries: Nova Scotia

After complaints from Nova Scotia motorists about increased premiums for mandatory insurance coverage, the Nova Scotia regulator drew conclusions similar to all other auto insurance compensation studies, i.e. that:

a. premium increases are to be expected as long as the existing automobile insurance system remains;
b. the major reason is the increasing cost of claims;
c. the primary cause is claims for compensation for bodily injuries;
d. third party liability claim costs have been increasing much faster than collision and comprehensive claim costs;
e. the increase in the average cost of a bodily injury claim over the last five years had been dramatic; and
f. automobile insurers have been taking drastic rate action to restore profitability.

The Government amended the *Insurance Act* to include a definition of "minor injury", together the term "serious impairment" which by regulation confirmed that non-pecuniary general damages for such minor injuries would be subject to a cap of $2,500 and that certain listed injuries, including chronic pain, would be excluded.

The evidence presented in the *Hartling* decision indicated the initial plan was to cap non-pecuniary general damage claims for all but the severely and permanently injured. However, through a political compromise in the legislative process, the group of traffic injured to be included under the cap was substantially reduced.

## 2003 Implementation of periodic reforms to the threshold/no-fault model: Ontario

The *Marshall Report* detailed the ongoing reforms undertaken by the Ontario government in 2003, 2006, and 2010 in an effort to control costs which continued to plague the auto insurance system. His conclusion that all the measures taken over that period amounted to only ineffective tinkering of the system serves as a warning to governments that piecemeal changes which do not solve the underlying cost issues will not be effective in the long term.

## 2013-2017

### 2013 Auto insurance reform model revealing deterioration: NSW

As noted, the *MAA* found deficiencies as of 2013 in the 1999 model mainly because proof of fault and the dispute processes in the scheme became highly adversarial which resulted in systemic benefit delays and unnecessary costs. This New South Wales experience demonstrates how tort can find opportunities to survive in an insurance model even where the right to sue has been restricted for the benefit of the traffic injured and motorists.

### 2013-2017 Auto insurance reform model revealing deterioration: Ontario

*Marshall* documented the Ontario history continuing auto insurance reforms between 2013 and 2015 and then decisively pronounced on their ineffectiveness, explaining that following each of the reform measures, costs and premiums decreased for a short period but then rose sharply to establish new highs. Despite further changes to curb costs, trends indicate claims costs will again rise, and cost of claims has consistently increased even though accident frequency has decreased.

*Marshall's* criticism of the impact of tort in Ontario was unflinching. First, he described it as confrontational, time consuming, and costly, then identified processes he considered particularly detrimental, such as the cost of legal counsel and experts which ties up negotiating time and the significant leakage in the benefit traffic injured receive by using the court system to secure their deserved compensation since their awards are reduced by the need to pay … large fees to lawyers.

*Marshall* was also critical of the additional costs to traffic injured by health as well as legal professionals' growing involvement in the no-fault accident benefits side of the system. He said governments intend the no-fault portion of the system to provide most, if not all, essential needs of injured parties through a system that is more efficient, less costly and delivers more of the end benefit to the consumer than the tort system. However where the no-fault portion of the system is outsourced to the private sector, and not structured properly, as he found to be the case in Ontario, this part of the system is beginning mirror the tort system with its inevitable confrontation, costs and delays.

*Marshall* was clearly concerned that it was the insured motorists who ultimately had to pay the full cost of the combined no-fault and tort systems, whichever way the system is structured. He was also concerned that the Ontario model excludes about 30 per cent of drivers (because they cannot prove the losses were due to a negligent driver) which leaves them with access only to the basic no-fault coverage.

*Marshall* also identified the solutions for the profound problems he exposed. First, he said where the core entitlement decisions are readily determined by programs of care and neutral independent examiners, there should be little structural need for conventional litigation and a consequent improvement in both health outcomes, and the efficiency and cost of the system.

*Marshall* then pointed the health outcome benefits shown in Saskatchewan system resulting from the removal of a cash incentive, namely a 28% reduction in whiplash claims and reduction of median time to closure of whiplash claims from 433 days to about 200 days.

*Marshall* also reported the positive outcomes found within the worker's compensation system which demonstrated that the majority of claimants, once they have recovered from their injury do not need further care or return for additional treatment. Those that do account for a fairly small proportion. He noted that actuaries in those models will quickly adapt to the rate of recurrence and are able to advise management how much capital to set aside for this eventuality. He noted with approval that the Québec auto insurance system follows this process, and their costs are the lowest in Canada.

Finally, the Committee noted that *Marshall* advocated a major cultural shift to promote claims processing on their merits so needed health care is provided through diagnosis and treatment as recommended by independent examiners and recognized that it should keep front of mind *Marshall's* trenchant analysis of the deficiencies in the Ontario system and the solutions he identified.

The thread running through *Marshall's* key findings is that the Ontario accident compensation system became too focussed on cash rather than care resulting in the loss of the goal of delivering benefits to deserving claimants quickly and inexpensively.

# Conclusions

1. The historical review and evaluation of numerous commissioned reports over decades and across many Canadian provinces provided compelling evidence that reformed traffic accident compensation models which retain tort features result in continuing premium instability in the medium and long term.

2. It was evident to the Committee that in a reformed auto insurance model tort finds opportunities to grow and thrive. Two recent examples illustrate this phenomenon. The New South Wales model, redesigned in 1999 to minimize tort components fell prey to pricing problems and bodily injury cost increases within 14 years. In short, the tort components found areas for regrowth. The Ontario experience was the same or similar, despite its intent to minimize tort with a high litigation threshold and enhanced accident benefits. Over time, tort components replicated with increasing litigation on the accident benefit side combined with duplication and increased service provider costs generated by legal and some health professionals.

3. More importantly, since the conversion of some systems to full no-fault compensation, emerging scientific data has produced equally compelling evidence that tort models impede health outcomes and recovery of traffic injured.

4. The Committee was satisfied on the evidence of its detailed historical analysis of auto insurance reform experience that preserving any component of tort in a reformed automobile insurance system is inconsistent with the needs of traffic injured. Further, since it adds unnecessary expense to policy holders, it also adversely affects the motorists who pay for automobile insurance.

5. The Committee concluded from its analysis that there should be a transformation from the current model and its primary tort principle of money compensation for non-pecuniary damages to a model based on better, more timely rehabilitation and health outcomes and the replacement of court determination of the measure of traffic accident pecuniary losses through a collaborative administrative panel-based process. The current mode of accident compensation should be reformed to expedite health outcomes and recovery to all traffic injured, including those who cannot prove fault of another driver.

6. The Committee concluded that to attain both optimal health treatment for all of its traffic injured and predictable, stable insurance premiums for road users, the Alberta motoring public would be best served in the medium and long term by the implementation of a pure no-fault system of automobile insurance designed with innovative evidence-informed medical diagnostic and treatment protocols and non-adversarial claims processes and assessments.

## C. Chronology of Alberta Auto Insurance Reform

Automobile insurance reform in Alberta has been marked by four significant events:

a. *A study of premium stability in compulsory auto insurance* by the Alberta Automobile Insurance Board (AAIB) in September 1991. The study generated a report which recommended three options for reform but no reform resulted.
b. An increase in the limits to Section B (no-fault) benefits in May 1995 from $5,000 to 10,000.
c. A major legislative reform in 2003 followed by supporting regulations in 2004. The reform included a cap on non-pecuniary damages for defined minor injuries and diagnostic and treatment protocols.
d. A constitutional challenge in 2004 to the reform legislation (*Morrow*) which is significant here for two reasons:
   i. testimony given at the trial by politicians and public servants about the process leading up to the legislation and regulations and by experts in accident compensation law, actuarial science and medicine; and
   ii. the outcome of the challenge which was a decision of the Alberta Court of Appeal in 2009 upholding the legislation.

These events will be considered in turn.

### *Alberta Automobile Insurance Board, A Study of Premium Stability in Compulsory Insurance* (September 12, 1991)

In the late 1980s concerns had been raised by Albertans about the pricing of compulsory automobile insurance.

The Government of Alberta (GOA) wished to investigate whether there were means to establish greater stability of pricing in the short term and long term for the benefit of Alberta motorists.

It was also found desirable to examine:

a. the current cost of compulsory automobile insurance;
b. the merits of the existing tort system for personal injury and property damage by automobile accidents;
c. certain proposals for improvement to the tort system; and
d. the question of whether certain features of no-fault automobile insurance systems may better serve Alberta motorists.

In September 1991 the AAIB reported to the Alberta Minister of Consumer and Corporate Affairs on the following issues:

a. the cost effectiveness of the current automobile insurance system for claims arising out of automobile accidents;
b. the desirability of implementing modest reforms to the current automobile insurance system to enhance its cost effectiveness;

c. the cost savings and effectiveness of a no-fault system for compensation for claims arising out of automobile accidents; and
d. whether there were reasonable grounds to support the proposition that modifications to the current system that enlarge no-fault features would produce greater price stability in the short and long term.

The AAIB commissioned a claims costing study from Mr. Joe Cheng (*Cheng Study* 1990) and an economic analysis of alternate compensation models from Professors Michael Trebilcock and Bruce Chapman (*Trebilcock Report*). (Volume 2 of AAIB Report)

The AAIB examined previous research, including the 1988 *Osborne Report*, held discussions with administrators of alternate insurance systems in other jurisdictions, including SAAQ, the Department of Licensing and Regulation of the Insurance Bureau of Michigan, and the Ontario Insurance Commission.

The AAIB received advice from scholars who had studied auto insurance models in and outside of Canada including Professor Marc Gaudry of the University of Montreal, Professors Claude Fluet and Peter LeFebvre at University of Quebec, and Professor Jean Bigot at the University of Paris.

The AAIB also considered its own information and knowledge of the operating automobile insurance system in Alberta.

The AAIB's findings included the following:

a. after examining the history of automobile insurance premiums and loss costs from 1972 to 1989, it found loss costs had increased dramatically since 1985 mainly due to the increase in bodily injury loss costs;
b. the increases in loss costs, i.e. 12.9% between 1988 and 1990, were more than twice that of the Consumer Price Index, and were caused mainly by the rate of increase of bodily injury loss costs;
c. the third-party liability premium increases in 1989 and 1990 were not yet sufficient to bring premiums into balance with the current expected costs;
d. claimants with minor injuries were overcompensated in the tort side of the system relative to all other traffic injured. Claimants with catastrophic injuries were undercompensated in the tort side relative to all other traffic injuries;
e. at-fault claimants were inadequately compensated for their economic losses relative to tort claimants;
f. there were structural deficiencies in the delivery of benefits in the current system;
g. all payments required under the current system were subject to delays;
h. the then current data proved that there was a pricing problem in the system which would persist in the future without some measures to counteract it; and
i. loss costs would continue to increase because of continuing increases in frequency and severity of claims unless bodily injury costs were curtailed and effective cost saving measures were not undertaken.

The *Trebilcock Report* provided an evaluation of the current and alternate models but noted inherent problems in such an undertaking because of the basic disagreement about what goals the systems are designed to serve and uncertainty in proving how well a current system, or any alternatives, achieve those goals.

Taking into account the economic analysis of alternative models set out in the *Trebilcock Report*, the AAIB examined four alternative compensation models including; (a) a current system with tort reform, (b) tort with enhanced no-fault (the model proposed in the *Osborne Report*), (c) elective no-fault (choice) and (d) pure no-fault.

The AAIB also considered the *Osborne Report*, in particular, the comments at chapter 12.

*Osborne* concluded that the workable compensation options were pure no-fault, threshold no-fault and an add-on plan with coexisting no-fault benefits and tort system access. He also commented on the awareness and input of the public and interested groups and the cost and impact of shortcomings in the existing system.

As to public consultation, *Osborne* observed:

a. due to the lack of public awareness of the no-fault/tort components of the system, the tort/no-fault debate has not been a large concern to consumers;
b. academic opinion clearly favoured no-fault compensation;
c. although insurers recommended a threshold no-fault model, implicitly, their preference was for a pure no-fault model;
d. lawyers' groups and others urge resistance to anything that will erode the values of individual responsibility, deterrence, fairness, and individualized compensation;
e. both insurers and lawyers' groups have vested interests in the final disposition of what the auto insurance system is to be, which should affect the weight of their insights; and
f. all agreed first party no-fault accident benefits should be increased.

Regarding the existing systems problems, *Osborne* said:

a. most compensation problems including cost, uncertainty, delay and the undercompensated are reflected in criticism of the tort system; and
b. based on history, if premiums are not to be increased, funding for increased first party benefits can only be secured by systematically reducing or eliminating existing non-economic loss compensation rights.

*Osborne* did not accept that the increase in bodily injury claims costs was a trend that would necessarily press against the limits of affordable, accessible premiums in the future. In this, he would ultimately be proven wrong.

As to the pure no-fault option, *Osborne* made these comments:

a. A pure no-fault system ensures compensation to all injured in traffic accidents on the same basis. The emphasis is on economic loss, although some plans provide modest non-economic compensation (including Québec and New Zealand).
b. From a compensation standpoint, pure no-fault is superior to the tort system.
c. From a rehabilitation perspective, it is in the public interest that all injured be rehabilitated.
d. In a pure no-fault model legal costs will be dramatically reduced because of the elimination of third-party claims.

*Osborne* rejected pure no-fault on fairness and deterrence grounds, and because it seemed to him that few seemed to want it. (However, earlier in his report he observed that academics and insurers did. Moreover, the preamble to his terms of reference stated that no-fault automobile insurance system was recommended by the Ontario Law Reform

Commission 1973, the 1986 Task Force, and the Select Committee of the Legislature on Company Law.)

As to the threshold no-fault option, *Osborne* observed that it was superior to the tort system but that it would produce smaller savings in legal costs than pure no-fault. He rejected this option as inefficient and arbitrary.

*Osborne* favoured an add-on plan with substantially expanded no-fault benefits and some tort system access. In his opinion these "could coexist in a soundly structured plan delivered by the auto insurance system at reasonable cost."

Taking all the foregoing into consideration, the AAIB concluded that to deliver all auto insurance models' objectives, no alternative was superior overall. Its own conclusions on the alternative models are as follows:

### Pure no-fault

AAIB did not seek cost estimates of a pure no-fault model but was satisfied that cost savings would be higher under a pure no-fault model, similar to that in place in Québec, than would be attainable under any other model. Thus, this model is superior in producing lowest premium costs. Further, a pure no-fault model would provide the highest degree of operational efficiency of all models.

AAIB concluded that pure no-fault and threshold no-fault systems function effectively in practice and noted that administrators in Québec and Michigan respectively reported a high degree of consumer satisfaction, although initially trade-offs were necessary that did not meet with approval of all groups of consumers.

### Threshold no-fault

The threshold no-fault model implemented in Ontario resembled the model in place at the time in the state of Michigan. It was expected to eliminate the right to sue for about 88% of traffic injured and contemplated no recovery for moderate claims for non-economic losses or for psychological injuries. Claimants with high incomes would not receive full compensation for income loss, although they might choose to buy additional coverage.

AAIB noted that the cost savings would be higher under the threshold no-fault model and that it had greater potential for premium savings and price stability in the long term than tort and a tort model with modest reform.

The AAIB reported that if Albertans require their automobile insurance compensation system to provide traffic injured restoration as far as possible to preaccident condition, by calculating full tort compensation for pain and suffering and loss of enjoyment of life, then premium levels must be higher than those achieved by pure and threshold no-fault models.

### Elective/Choice

The AAIB examined the proposed elective or choice model that was proposed in 1989 to the Ontario Automobile Insurance Board. It noted commentators' concerns that the choice model would be subject to serious adverse selection and that the more drivers choose no-fault; the higher will be the premiums for those who elect tort. As well, those who choose tort will have to sue their own insurers and pay premiums reflecting the cost of those claims.

The effect will be increasing divergence of average premiums between the two options which will cause all drivers to choose no-fault and, in effect, convert the system to a pure no-fault model.

### Tort with modest reforms

As compared to the pure no-fault system which ranked first in the attainment of low premium costs and in operational efficiency, the tort model scored last on compensation coverage and operational efficiency, and also scored very poorly on the attainment of low premium costs.

There was overcompensation in cases of minor injuries and undercompensation in cases of catastrophic injuries. Some tort claimants were probably overcompensated for their wage loss as claimants represented by lawyers usually received higher recovery than those that did not. There was an unusually high inflation rate in bodily injury claims and some delays in receipt of compensation on the tort side.

The AAIB concluded that greater cost savings and effectiveness can be achieved by conversion to a primarily no-fault model with the sacrifice of certain tort benefits.

Despite the foregoing, AAIB concluded that there were not irreparable problems with the tort component of the system and that the pricing problem would be adequately met in the short term by implementing Option 1 or Option 2.

The AAIB warned that transformation of an auto insurance system is a significant undertaking and that in the automobile insurance market system changes can cause market dislocation and instability that will affect consumers and suppliers. The overhaul an auto insurance system can be costly and may have to be borne ultimately by consumers.

The AAIB recommended modifying the insurance system to reduce the amount paid to traffic victims. It proposed two modest tort reform options to attain premium stability in the short term, to reduce litigation and curtail the inflationary effect of claims costs over time.

### Option 1

The AAIB concluded that greater price stability could be attained in the short term (five years) if modifications were made to the current system to enlarge the no-fault features and non-pecuniary tort benefit for catastrophically injured but to also restrict tort rights to correct overcompensation in some instances and to contain claims costs.

The AAIB suggested that cost savings could be achieved by imposing a deductible of $10,000 for all non-pecuniary damage claims and to implement other tort reforms such as mandatory structured settlements, adjustment of prejudgment interest rates for non-pecuniary general damage claims and elimination of the collateral benefits rule.

### Option 2

The AAIB suggested an alternative Option 2 which was implementation of a threshold no-fault system with an enhanced no-fault benefit package. Under this option, the right to sue would be restricted to only the most serious claims and it would have to be considered whether such a threshold system should have a verbal or a monetary limit.

The AAIB noted that the cost savings under this option were lower than Option 1 but the benefits were more in line with those offered to the traffic injured in Ontario and Québec and the needs of Albertans in 1991-2. It expected that Option 2 might solve the problem of premium

stability in the long term. It recommended further study for the solution for premium and stability in the long term.

Because it could not determine if modest tort reform would ensure premium stability in the long term, it recommended the government consider alternative models in the order set out in the *Trebilcock report* until it achieved the combination of compensation features most suitable for Alberta motorists.

### Public consultation

The Minister sought public input and received a written submission from the Canadian Bar Association Alberta Section (CBA) disagreeing with the recommendations.

Neither the CBA nor any other organization representing lawyers provided information as to:

a. the amount of fees charged and recovered by lawyers acting for traffic injured in conducting minor, severe and catastrophic personal injury cases;
b. the net amount of settlements or awards that were ultimately remitted to traffic injury clients compared to the amount paid by defendant;
c. the cost of litigation and the time taken to complete a personal injury case in minor, severe and catastrophic personal injury cases;
d. post litigation analysis of disposition of awards recovered; or
e. cost and number of expert witnesses required for injury cases.

## Increase in no-fault benefits

In May 1995, the GOA increased Section B benefits from $5,000-$10,000 for medical rehabilitation and made some improvements within Section B to disability payments. (*Automobile Accident Insurance Benefits Regulation*, AR 114/95.) Otherwise no automobile insurance reforms were undertaken from September 1991 until 2003.

## The 2003-2004 Reforms

Between 1986 and 2004 automobile insurance premiums in Alberta increased steadily to the point that there were concerns about affordability and accessibility of mandatory coverage. Auto insurers were required to submit applications for premium increases to the AAIB which required, among other things, that they be supported by sound actuarial data and opinions. Several actuaries who later gave evidence in the *Morrow* case came to conclusions about the causes of premium increases. These are outlined below.

Mr. Ted Zubulake's testimony included the following points:

a. bodily injury coverage financial results contributed to the insurer action between 1986 and 2004;
b. the greatest increase in costs through those periods was third-party liability coverage and escalation of bodily injury loss costs driven by minor soft tissue injury claims costs;
c. the average pain and suffering cost for minor injuries in 1990 was almost $3,000 whereas in 2003, the average pain and suffering cost for minor injuries was almost $17,000 in 2005 dollars;
d. this increase in excess of the compounded rate of growth amounted to an excess of 10% per year;

e. thus, minor injury accident related injuries such as soft tissue strains and sprains represented a high proportion of bodily injury liability claims costs;
f. between 2000 and 2003 auto insurance premiums sharply increased and became less available in the regular insurance market, mostly due to escalating bodily injury claims costs, likely driven by minor soft tissue injury claims costs; and
g. at the time the GOA was considering automobile insurance reforms, auto claims costs were increasing primarily due to higher minor soft tissue injury awards.

Dr. Ron Miller gave the following evidence regarding the causes of premium increases:

a. from 1984 to 1999 the average cost of third-party liability bodily injury coverage was increasing at a steep rate compared to the all Canada Consumer Price Index (CPI);
b. in Alberta and Canada, typically inflation inherent in third-party liability bodily injury costs exceeds the CPI inflation. Costs continued to increase because the inflation includes CPI inflation, but there is a load in addition;
c. from 1994 to 1998 claims frequency increased on average by about 2 to 3% per year while claims severity increased by 7.3% per year resulting in an increase in claims cost per auto on average of 9.8 %, while CPI inflation averaged only 1.6% per annum. Those results imposed large stress on the system which was likely the cause of the increase in rates, consumer dissatisfaction and resulting reform measures;
d. from 1999 to 2001 claims cost reduced and then spiked to the highest point in 2004; and
e. in 2000 the loss ratio at 100 and 110 was unprofitable (for insurers), reflective of the increase in bodily injury claims costs not being offset by sufficient premium increases.

Mr. Joe Cheng also testified about the causes of the premium increases:

a. between 1986 and 2002 bodily injury claims were rising faster than the Consumer Price Index by 28%;
b. between 1986 and 2002 bodily injury claims per 1000 vehicles had increased 72%, which is a significant factor contributing to premium increases;
c. compounding the increase in claims by 72% and the inflation over the Consumer Price Index at 28% presents 120% rising faster than the Consumer Price Index;
d. premium increases in 2001 to 2003 were mainly due to higher bodily injury claims costs and the need to redress the accumulated premium deficiency;
e. auto insurance premiums in 2002 and 2003 increased mainly because of the high cost of bodily injury costs which were rising at about 120% more than the Consumer Price Index. In hindsight, if insurers had realized that was occurring at that time consumers would have had to pay 45% more than the Consumer Price Index in that period;
f. the major issue in Alberta was the accumulated premium deficiency in 2001 and the insurers' need to catch up to the proper level. This is why premiums increased while claims may not have done so; and
g. if that trend continued, Albertans would find their own insurance premiums less affordable.

## Testimony in *Morrow v. Zhang* – The political process behind the reform and the expert opinions related to it

### The political process

Concerned about the continuing deterioration of the auto insurance market, the GOA undertook an investigation into possible reform. This led to Caucus of the GOA approving a policy option to revise the existing tort system with a deductible or cap on pain and suffering awards for minor soft tissue injuries. The reform produced some reductions in premiums.

Regulations that became part of the reform produced diagnostic and treatment protocols for the no-fault benefits provided by the standard auto policy and these have significantly improved the timeliness and effectiveness of treatment and helped Albertans with minor injuries recover.

The chronology of this process is instructive and so is set out in detail below.

In 2002, Alberta Finance (AF) and the Government of Alberta (GOA) became concerned about problems with the auto insurance system, including:

a. affordability;
b. long-term rising claims costs;
c. deteriorating returns and solvency of insurers;
d. unavailability of insurance in the regular market;
e. inadequate Section B benefits; and
f. barriers to effective treatment of minor injuries.

Premium increases, on average, were 11% in 2002 and 13% in 2003. Even larger increases were found for high-risk drivers. The Facility Association, (a non-profit organization whereby high-risk drivers who were refused insurance could access insurance through a pool underwritten by the auto insurers and distributed rateably among them) (FA), reported premiums increased 60% in 2002 and 9% in 2003.

Newly licensed and young drivers were assigned the same driving record as a driver with a claim. Drivers under age 25 were assigned higher premiums.

AF received many letters expressing concerns and commenting about a proposed cap on non-pecuniary claims.

Comparisons with other provinces showed that Alberta has much higher premiums than public systems for inexperienced young drivers and risks such as drivers with lapses in coverage. Rates approaching $7,000 were unaffordable to many drivers.

The Insurance Brokers Association of Alberta estimated the number of uninsured drivers was in the range of 10,000. The Motor Vehicle Accident Claims Fund data showed increases of about 11% in uninsured driving convictions (5300-5900) and 14% in claims from 2000 to 2002.

In 2002 Alberta auto insurers underwriting results, profit and return on equity fell. Thus, less capital was retained causing deterioration of solvency and capital tests. The Cooperators General Insurance Company had ceased writing new business in Alberta.

A reduction in capital translated into declining coverage and accessibility problems for consumers. The Insurance Bureau of Canada (IBC) reported the return on equity for the property casualty industry in Canada in 2002 was the worst on record in the previous 25 years.

Insurers pay a premium tax and also an annual health levy set by the Minister. Before the reforms, insurers could refuse any application for insurance but in such a case a driver was entitled to insurance from FA.

The financial pressures on insurers resulted in stricter underwriting guidelines, coverage being declined for more Albertans and more drivers being unable to obtain insurance other than through the FA. The FA noticed growth in the number of persons insured in 2002 which continued in 2003 (and 2004). Prior to the reforms it was five times higher than in February 2001.

The Superintendent of Insurance, Dennis Gartner, (Gartner) concluded the increases were not explained by a sudden increase in drivers with poor driving records.

FA would attempt to assign drivers without bad driving records the best possible rate. FA rates were very high for many classes but still subject to approval of the AAIB.

Gartner noted in his testimony that the 1991 AAIB report showed that the GOA should consider whether to continually increase premiums or modify the structure of system to control loss costs.

In 1995 damages awarded for most soft tissue injuries ranged from $6,000-$10,000. By 2000 they were at $24,000 and at 2002 they were at $29,000.

AF also identified a problem dating back to the 1991 AAIB report with inadequacy of Section B benefits. There was also difficulty in accessing treatment in part because benefits were being unfairly restricted or treatment terminated by insurers and victims had to pay for a treatment themselves and then wait for later insurer reimbursement. Some traffic injured were also having problems accessing effective treatment.

A report of the AAIB in 2002 noted a 100% increase in injury loss costs over the previous 10 years. It confirmed its earlier conclusion that there was nothing in the system to control bodily injury loss cost increases. It warned that premium increases could result in public backlash. It noted that between 1986 and 2002, bodily injury claims costs per vehicle had tripled while property damage claims grew only 23%.

Gartner noted in his testimony that Professors Neilson and Kleffner from the University of Calgary Haskayne School of Business recommended reduced access to compensation for non-economic losses.

The Office of the Superintendent of Financial Institutions reported that the financial position of the property casualty industry has been deteriorating for several years due to rising claims costs, especially in auto insurance, not matched by increases in premium revenue.

The GOA's investigation of possible auto insurance reform began in April 2003.

In April 2003 the Minister of Finance (MF) asked Robert Renner, MLA (Renner) to assist in developing reforms in response to concerns about rising insurance premiums and prepare options for discussion in July. It was recognized that auto insurance issues would be complex and controversial. There was media attention in Alberta and across Canada.

Although Renner had no insurance expertise and since 1993 no interest in auto insurance other than as a consumer, he had been chosen for his experience in dealing with complex issues and carrying forward government initiatives.

Renner and MLA colleagues had calls from many constituents regarding increased premiums and the problem of affordability of insurance. They heard insurers would move high-risk clients into the FA which resulted in higher premiums and coverage problems with having to hire a lawyer to pursue Section B benefits from their own insurer.

Renner was asked to report to Caucus on options for a 'made in Alberta' solution.

Renner and Gartner had several meetings to discuss options with the MF, the Deputy Minister and other government employees. They also engaged Mr. Jack Donahue, Q.C. (Donahue) to help explore with the Minister a range of options including no-fault insurance, caps on claims, public delivery, increased accident benefits, caps on premiums, or maintaining the status quo.

Gartner had examined portions of a survey indicating 39 out of 1000 agreed that putting a limit on settlements was an issue for Albertans.

Donahue, a practising lawyer in Calgary with 39 years of experience, although none in auto insurance or personal injury law, was engaged because of his long experience in providing policy, strategy and legal advice to government departments on troublesome files that involve policy and strategy. Donahue was to provide an external look at issues, frame the issues and prepare a strategy to address the issues to present to Caucus.

Renner and Gartner discussed with provincial officials the alternate models in different provinces and their experience with claim costs and premium stability. The universal message was that it would be impossible to control insurance costs or premiums unless soft tissue general damages were controlled.

Renner testified that the purpose of the reform was to make the cost of insurance more affordable and to pass the savings onto the consumer.

A strategy group (SG) was formed including the Deputy Minister of Finance, an official with the department and an economics professor to contribute to the work.

Donahue was informed that escalating premiums were troubling Albertans and were an issue in New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Ontario. The perception was that premiums were higher in Alberta than Manitoba and Saskatchewan. He could not recall if the SG had information in May 2003 that insurance premiums for auto policies were lower in no-fault jurisdictions than full tort jurisdictions.

The Deputy Minister gave guidelines to the SG as to what options were to be considered and recommended to Caucus. SG would look at presentations and discuss issues being directed by the Deputy Minister or the Superintendent.

The SG was largely looking to reform to solve the problem of young drivers finding insurance unaffordable and to reduce premiums that were unacceptably high for some drivers without making other drivers pay those costs. In assessing how to do so, the SG considered the models in Saskatchewan, British Columbia, Québec and the existing Alberta model.

Renner and Gartner conducted a cross country tour. They met with the Saskatchewan Minister responsible for insurance and SGI officials. In Manitoba Renner met with MPI and Gregg Hansen, president of Wawanesa Mutual Insurance Company (Hansen). In Toronto Renner met with an MLA responsible for government review. In Nova Scotia he met an insurance advocate appointed by the government. In Ontario he was told that deductibles have not been a solution because after implementation they had to increase the amount shortly thereafter. His impression was that the judiciary reacted to deductibles by increasing the general damage awards.

Manitoba and Saskatchewan advised that their provinces implemented no-fault regimes primarily to solve the cost problem presented by soft tissue injury damage awards. Québec also had a no-fault system. The Maritime provinces were considering alternatives. British Columbia indicated it controlled claims more effectively because ICBC was a sole provider and defended all claims aggressively. None had implemented general damage injury claims caps to that date.

In the cross-country tour to Gartner's recollection no public concerns about traffic injured not getting proper treatments by health professionals were raised.

The SG did not consider a government subsidized insurance scheme due to:

a. the significant costs to establish;
b. the increased economic risk;
c. the possible dislocation of jobs;
d. the fact that GOA was not in the business of being in business;
e. the transition issues to a public sector environment; and
f. Its view that the private sector with appropriate regulations was the more appropriate provider.

The SG identified there was a cost to eliminating the legal rights and creating a no-fault system but it would have the advantage of treating all traffic injured equally.

Despite awareness that it would provide consistent and thus equitable predetermined benefits, would simplify and speed up administration of claims and reduce administration and litigation costs, Renner did not endorse the no-fault model and noted (in Québec) consumers had to purchase insurance from the government for bodily injury claims and property insurance from private insurers.

Despite the advantages of predetermined benefits, ease of administration and reduced litigation and investigative costs, the SG rejected the no-fault model because it would entirely eliminate existing legal rights.

The SG did not consider the no-fault option or perform a formal cost benefit analysis as it felt Albertans would not be comfortable to give up the right to sue a wrongdoer. Donahue could not recall what comparisons were made as to the nature of coverage respecting costs and benefits.

The SG considered and rejected hybrid models which involves a choice between no-fault and tort, or combined the two. Saskatchewan could be considered a hybrid system with a tort option. The SG noted the first offered consumer choice but would be costly to administer or run concurrently and would risk cross subsidization.

Renner rejected the Saskatchewan model, concluding it would be costly to implement a no-fault model and then administer two systems concurrently. It also seemed to require

government intervention to ensure no cross subsidization among policyholders within the different systems.

The second hybrid model would require purchase from two different providers. It was presented as one option but was not preferred. Renner did not recall any formal cost benefit analysis of this model.

Renner favoured reforms that would produce reasonable entry-level premiums incentives for safe drivers, penalties for drivers with accidents and violations and regulation of awards for certain injuries.

The GOA asked the Alberta Civil Trial Lawyers Association (ACTLA) and Insurance Bureau of Canada (IBC) to recommend a joint solution for automobile insurance reforms which the GOA would seriously consider. However, ACTLA and IBC could not agree on several major issues and thus issued separate responses.

The SG prepared a presentation to Caucus including the no-fault option.

With advice of the SG, Renner and the MF returned to Caucus with three options for consideration:

a. a revised tort system with a deductible or cap on pain and suffering awards for minor soft tissue injuries and a benchmark premium for basic coverage varied only for driving record, class of vehicle and geographic territory;
b. a no-fault system that set predetermined limits for benefits for economic losses, limited payments for non-economic losses and prohibited or severely restricted the right to sue an at-fault party. (like Manitoba); and
c. a combined tort and no-fault system which the government regulated or possibly delivered no-fault injury benefits with the right to sue for property damage maintained under a tort system. (like Québec)

On July 7, 2003 Caucus accepted Option (a) and directed formation of an implementation team (team) to develop plans for the policy option. Caucus gave permission to cap non-economic soft tissue injuries although advised Renner was not certain it would be necessary. Renner and Donahue were appointed to co-chair the team.

The GOA never surveyed the public on whether there was support for a cap on general damages or other restrictions on recovery.

Donahue was advised to proceed with an implementation plan and present it in the fall. A team was established on July 11, 2003.

The team consisted of Donahue, Renner, Brian Kapusianyk, Hansen, Nick Geer, Shelley Miller and Alain Thibault. Messrs. Hansen and Thibault were insurance company executives. Mr. Geer was the then CEO of ICBC. Kapusianyk and Miller were lawyers from Calgary and Edmonton respectively.

Gartner's office created the auto insurance reform policy framework terms of reference as it interpreted Caucus' direction.

The team was given a draft auto insurance reform implementation plan dated July 16, 2003 along with briefing and background material pertaining to the Alberta insurance system, the process for rate setting, the FA, the Motor Vehicle Accident Claims Fund, a summary of other Canadian auto insurance systems, complaints received by the GOA, an analysis of media coverage, submissions from ACTLA, and IBC, information about reviews from Nova

Scotia, New Brunswick and Ontario, numerous independent studies and a summary of Alberta whiplash award decisions rendered between 1992 and 2002.

The issues to be addressed were those that related to minor soft tissue injuries and the cause of rising premium costs.

The consistent message was that the problem of long-term insurance premiums would not be solved unless the issue of minor soft tissue injuries was resolved. The team was to examine reforms either by way of a cap or a deductible imposed by regulation.

The team was also given other material Renner and Gartner collected from their cross Canada tour, the 1991 *AAIB report*, and the Supreme Court of Canada Trilogy of cases, to assess the question of whether court awards for minor injuries were equitable considering catastrophic injuries, though indexed for inflation, were capped.

The team also received a memorandum indicating other provinces were proposing to regulate non-pecuniary damages, and a memorandum from Miller comparing the merits of a cap against a deductible considering the experiences in Australia and Ontario, which led to the conclusion that a deductible would not be pursued.

After review of the materials it was clear that reform to all aspects of auto insurance would be required, premiums would have to be balanced against claims costs and reforms would have to consider the long-term viability of the auto insurance industry.

The team began work in August 2003 to identify and cost options for Section B benefit levels and for limitations on pain and suffering awards. It retained KPMG and Mercers to provide actuarial services.

KPMG was retained to advise what average premium would be required in Alberta to align it with other provinces and then calculate the reduction required to achieve the Caucus policy directive. The number was between $200 and $250 million.

KPMG analyzed closed claim surveys in 2001 in Nova Scotia and New Brunswick and concluded claims for minor injuries constituted 78% of the total amounts paid for all bodily injury claims. It applied then existing definitions from the Maritime provinces and Ontario. The team concluded that information would be reliable, very similar to an Alberta study, and so performing an Alberta closed claims study was unnecessary.

KPMG found significant savings could be obtained from caps and deductibles.

Renner knew from the actuarial calculations the amount of savings desired, i.e. between $200 and $250 million, and had a general idea of how to achieve it.

One of the main reasons for the reform was to reduce premiums especially for young drivers, seniors and FA candidates. The team considered whether it would be acceptable to take money saved by capping and use it to reduce premiums for young drivers. Raising premiums for all Albertans would not have been acceptable.

The team considered whether it was reasonable to treat minor injury claimants differently. As a trade-off, it favoured medical benefits to help expedite the recovery and evolved

treatment protocols so they would not have to fight for insurance payments. They had entitlements such as increased Section B benefits that others did not have to enhance their ability to recover and reduce the number of injured overall.

The team consulted with various service providers and interest groups. The potential for a cap was the subject of much public discussion. Gartner considered the main aspect of the debate was the insurance industry demanding a cap and trial lawyers rejecting any cap being imposed.

The team vigorously debated the issues. Not all agreed on the contents of the reforms or the policy direction of Caucus, but concluded a cap was the more appropriate option.

Donahue thought the $4,000 cap figure was a starting point provided by AF. He could not recall if the team had any input into that starting point or whether it was appropriate but said it did turn out to be the endpoint.

In 2002 AF had prepared draft legislation which included several of the reforms suggested in the 1991 *AAIB report*. The draft became known as *Bill 33*, although it was not proceeded with.

The team was directed to cost various items of the *Bill 33* reforms but not to present a formula and create a cap. It was asked to determine the amount that would be saved by imposing a $4,000 cap and how much would be saved by imposing the *Bill 33* tort reforms.

KPMG was asked to estimate the net savings with the cap of $4000 for minor personal injuries, increased accident benefits from $10,000 to $50,000 and implementation of the *Bill 33* tort reforms.

KPMG applied definitions from the Maritime provinces and Ontario which were not ultimately the definition used in Alberta.

Gartner said the lion's share of the savings was intended to be generated by the cap.

Approximately 10,000 claims would fall below the cap. Those 10,000 would generate roughly $200,000,000 in savings. This process would produce an average of $20,000 for each minor injury victim. On average 50% of Albertans would save an average of $150 on their auto premium. Capping minor injuries would treat those 10,000 Albertans differently but also by enlargement of the Section B benefits had made those benefits more accessible to those Albertans.

On August 13, 2003 a memo to the Agendas and Priorities Committee (APC) said that general damage awards for less serious injuries would likely need to be regulated. No mention of soft tissue injuries was made. The team proposed to define "major injuries" by specifically listing certain injuries as "major". Any injuries not included in that list would be designated as "minor injuries" and would be subject to the legislative cap.

Dr. Larry Ohlhauser (*Ohlhauser*) helped create a list of major injuries.

SPC disagreed with the August 13, 2003 approach to APC and directed a specific definition of what was a minor injury. SPC wanted more dollars involved in the decision and information as to who would be affected. The SPC sought to secure cost savings from other than major injuries and did not want the cap to unintentionally affect certain injured persons.

In September 2003 Ohlhauser was asked to find certain medical terms to develop regulations dealing with motor accident soft tissue injuries. He advised that most (80% to 90%) minor injuries such as strains and sprains, if properly treated, would heal in three months.

*Ohlhauser* reported that the assessment and diagnosis of treatment of some minor injuries have been inconsistent and there was no effective patient-focussed process for reassessing injuries for those who did not recover in the expected timeframe. He suggested that guidelines for consistent diagnoses and treatment of these injuries would help improve injured persons' recovery.

Ohlhauser was retained to assist to develop a process to help Alberta traffic injured to recover more quickly and effectively. However, *Ohlhauser's* work surrounding the treatment for different category of injuries was contentious among the health professionals.

After consultation with victims, lawyers and other stakeholders, the team developed proposals to present to SPC on October 15, 2003.

Renner recalled one of the difficulties with soft tissue injuries was determining when they had resolved and a discussion as to whether minor injury should be determined according to the time it takes to heal. That is why they designed treatment and diagnostic protocols.

*Ohlhauser's* proposal had a significant impact on the policy.

On October 15, 2003 the Minister's Report to SPC referenced a cap on claims. The intention was to cap less serious injuries.

Renner presented reforms designed to reduce premiums and increase accident benefits funded by the savings from the proposed cap and the *Bill 33* tort reforms. Renner also proposed guidelines for health practitioners in assessing injuries and treatment protocols that would not require prior approval of the insurer.

To that point Renner had proposed listing designated injuries so that anything not designated would be a minor injury.

*Ohlhauser* provided input to Renner's presentation to SPC on October 15, 2003.

At the SPC meeting, discussion with 25 to 30 Legislative members as to what should comprise minor injuries resulted in a consensus that they should consist of sprains and strains.

SPC did not agree to implement the proposed plan. It wanted a clear definition of minor injury. It wanted to address a process for defining minor strains and sprains, options to answer concerns about territory risk rating, a communication plan to the public and stakeholders for feedback and determining optional insurance to cover lower awards for minor injuries.

SPC asked Renner to specifically define what injuries would be considered minor and subject to the cap.

Ohlhauser was asked to organize a group of healthcare professionals to develop guidelines for diagnosing and treating minor injuries. Gartner was asked to look at other initiatives to reduce the incidence of injuries, particularly in relation to traffic safety.

The initial proposed minor injury definition was a sprain, strain or flexion extension injury to the spine that resulted in a functional limitation of not more than 18 months.

Ohlhauser's working group did not support the 18 month limitation on the proposed minor injury definition. He recommended WAD I, II, and III (whiplash associated disorder) be included in the definition.

At meetings on October 15 and 27th 2003, participants agreed that a minor injury should be something the average person would understand as a minor injury but with the legal definition.

On October 27, 2003 Ohlauser attended a further meeting with SPC.

SPC decided as follows:

a. the priority was to take care of traffic injured as the primary goal irrespective of any changes made to save money on the premium side;
b. Renner was directed to prepare a definition of minor injuries;
c. there should be recommended a process to define what would be minor injuries;
d. a protocol should not be developed until minor strains and sprains were defined; and
e. The Minister was to establish a process to define minor strains and sprains, address concerns regarding territory risk rating, establish communication process and determine if optional insurance could be provided to cover low awards for minor injuries.

The team began to look at the soft tissue injury definition but then a scare campaign was initiated that the GOA was going to cap all claims in the province. It then had to define for Caucus what was its original intent.

Donahue was not sure how it was arrived at but a draft definition was drawn based on something taken from the first SPC meeting, along with the definition of major serious injuries, because Caucus was responding to media reports that caps were to be applied to permanent injuries.

The definition became very important to SPC and evolved several times due, in large measure, to feedback from SPC, stakeholders, insurers, legal industries, consumers and victim groups.

SPC directed the team to stop advising what was not included in the definition but to include what was.

On October 30, 2003 Cabinet approved regulations to freeze premiums retroactively in order to stabilize premiums until the implementation plan was completed.

There was still a huge media campaign about minor injuries and increasing premium costs. Insurers were still applying to the AAIB for premium increases.

Gartner asked the AIRB to analyze the financial effect of the premium freeze.

The rate freeze took more funds out of the premium side and impacted some of the numbers examined but not the recommendations. Some of the recommendations were not contentious and were implemented sooner which resulted in some additional savings but mainly the insurers were required to absorb the cost of the freeze and were unhappy about it.

The AIRB responded that the effect of the rate freeze was to produce $25 million in premium reductions for the last two months of 2003 and $100 million for 2004. As a result of the rate freeze, Gartner said he had to come up with at least $125 million worth of savings to offset

the cost of the freeze. It was harder to show at the end of the process what all of the savings would be.

The GOA discussed how to compensate insurers for the loss of revenues resulting from the freeze. The freeze was a short-term item funded in part by the early proclamation of *Bill 53* with collateral benefits and tax rules plus freezing of the health levy which paid for it in part.

The net cost after mitigating measures would be funded by the insurance industry. The intent, after the mitigating factors were applied, was to leave to the industry to finance the rest of the freeze. It was not a consideration that insurers impacted by the freeze order would recoup their losses through the cap.

The Cabinet briefing on November 3, 2003 indicated that minor strains and sprains that heal quickly will be the only injury subject to the cap and the definition will be developed in consultation with organizations representing injured persons, consumers, insurers, lawyers and healthcare professionals. Cabinet directed outstanding issues return to SPC for final recommendations to Cabinet.

The actuaries could not confirm the purported savings of each of the latter proposals.

On November 3, 2003 SPC decided to include under the cap minor sprains and strains that heal relatively quickly. Reference to serious injury not expected to improve and the term "permanent" was specifically excluded.

SPC did not want to prohibit a *bona fide* case of an apparent minor injury that did not recover as expected from clearing the cap. It did not want the definition to include a time period for complete recovery. SPC realized there would be grey areas and wanted to leave it to the courts to determine what were 'normal activities'. A broken bone healing within a year would not be subject to the cap. A WAD injury with symptoms after 18 months would not be within the cap and would depend on court interpretation.

The team continued to meet with stakeholders.

The ultimate definition was continually restricted by Caucus and so the cost saving was continually reducing. The cost saving reductions reduced the number of persons affected by the cap because the object was if an Albertan had a minor accident the impact should be as minor as possible.

Gartner requested Ohlhauser provide advice as to the definition of "minor injury" and to develop protocols and guidelines for diagnosis and treatment to improve their prognosis.

Ohlhauser met with the team on November 7, 2003 and discussed the definition of minor injury.

*Ohlhauser* conducted a literature review, engaged professionals and representatives of healthcare groups, proposed a model for consideration and enlisted a core working group to provide input as to the diagnosis and treatment of all soft tissue injuries. He interviewed clinicians experienced in treating soft tissue injuries and interviewed others. He prepared a presentation for meetings with consumer and injury groups including insurance and legal.

After receiving feedback from IBC and WCB Ohlhauser determined that an evidence-based approach to diagnosing and treating whiplash injuries was consistently advocated. There was a wide variation in recovery times for WAD injuries in different circumstances and countries.

It was important to identify those less likely to recover quickly and uneventfully by referring to certain alerting factors. Once identified, those persons would more likely require multidisciplinary assessment and treatment by an inter-disciplinary rehabilitation team.

The object was to reduce the numbers of persons complaining of chronic whiplash symptoms. Improved recovery time could occur if care was managed properly which included making an accurate diagnosis, an appropriate injury treatment plan and identifying early the poor prognostic factors.

Around November 17 2003 a Ministerial Report referenced the definition with functional limitations lasting no more than 18 months. Renner, although involved in discussions, did not draft the report but agreed that a time element was part of the consideration at that time.

On November 17, 2003 the SPC considered a more specific definition for minor injury sprains and strains. Ohlhauser discussed the definition, said it was a work in progress and the development of diagnostic criteria would be finalized later.

The SPC accepted the suggested reforms and approved the recommendations for a more specific definition of minor injuries that became restricted to strains, sprains and flexion extension injuries to the spine.

The SPC accepted a revised report on November 17, 2003.

On November 18, 2003 Cabinet agreed to implement the auto insurance policy framework except optional insurance for pain and suffering coverage.

On November 19, 2003 a press release indicated the minor injury compensation limit of $4,000 would be restricted to minor strains and sprains and the reform package would save $250 million.

On November 24, 2003 *Bill 53* was introduced to the Legislature.

On November 27, 2003 Hansen resigned from the team stating he did not want his name to be associated with *Bill 53*. Many insurer executives expressed displeasure with the reforms.

On November 27, 2003 Ohlhauser met with Dr. Ferrari and reviewed other compilations including the *Québec Task Force Report* which had a useful classification system for grading whiplash associated disorders and enhancing communication between practitioners and insurance regarding the patient condition.

On November 28, 2003, Gartner, the Deputy Minister and Donahue met with insurance industry members.

The team was the disbanded in November 2003 and a new transition team was established.

*Bill 53* was passed on December 3, and received Royal assent on December 4, 2003. (the *Insurance Amendment Act, No. 2.* S.A. 2003, c.40.)

On December 11, 2003 Gartner met with insurer chief executive officers to discuss their concerns with the benchmark premium system. They proposed an alternative to the benchmark system which was approved by the transition team and SPC.

The team continued to meet with stakeholders and discuss reforms and development of the definition which contained an 18 month time limit for recovery of sprain, strain and flexion and extension spine injuries.

Health professional groups Ohlhauser consulted said an 18 month time limit was not supported from a medical standpoint and the type of injuries contemplated by the cap would usually resolve far sooner. They wanted a diagnostic approach rather than an approach based on artificial time barriers.

The transition team concluded the result would undermine the goal of early and effective recovery through protocols and preapproval of Section B benefits.

Ohlhauser met with the core working group which originally included members of the Colleges of Physicians and Surgeons, Physical Therapists, and Chiropractors of Alberta, the Alberta Association of Occupational Therapists, Alberta Medical Association, Massage Therapists and Psychologists Associations. Their object was to understand the context of developing the "minor injury" definition, agree to a process to develop diagnostic criteria and treatment protocols, finalize the definition of minor injury and improve the Section B benefit processes.

On December 15, 2003 *Ohlhauser* advised that the 18 month timeframe was not consistent with the natural healing process or medically supportable and the subject injuries generally resolved prior to that time period. He recommended removal of the temporal limit and replacement with a reference to functional limitation.

*Ohlhauser* said the priority of healthcare providers should be to focus on assisting quick and effective recovery and any dispute resolution process dealing with entitlement to damages should be set out in a separate regulation to involve practitioners other than those providing the care to the injured person.

On December 15, 2003 the proposed definition of minor injury was examined in a meeting with the transition team. The definition was discussed between January, February and March 2004. Sprains, strains and WADS were singled out because KPMG warned that if they were not dealt with, premiums would not be stabilized.

Originally "minor injury" included contusions, minor concussions and fractures but those were eliminated after meetings with full Caucus. The SPC continued to limit the definition further than those in New Brunswick and Nova Scotia. When Caucus was informed the savings would not result, Caucus moved the focus from savings to the proper definition to reduce the impact as far as possible and not relate it back to savings.

On December 17, 2003 Gartner advised all licensed insurers in Alberta of a new Fair Practices Regulation put in place to prevent unfair market practices such as the requirement of a lawyer to notify an insurer of a retainer in respect of a claimant and the requirement of the insurer to disclose to the lawyer the policy limits of the insured's policy.

The transition team of Renner, Donahue, Kapasianyk, Gartner and AF and Department of Justice officials continued to develop the *Premium Regulation and Minor Injury and Treatment Protocols Regulations* and to implement the reform plan and oversee the transition up to June 2004.

Ohlhauser met with the core working group, and received feedback and responses from stakeholders to a draft of the continuing

care model. He met with representatives of Peace Hills Insurance Company which suggested the injured person have access to physicians for diagnosis within 2 to 3 days of the loss, treatment to be in accordance with internationally accepted practices and over treatment by clinics must be avoided. He provided the traffic injury recovery chart which identified three levels of claimants grouped according to recovery time.

On February 18, 2004 *Ohlhauser* presented to the transition team the most recent version of the injury management system he developed and a process for development of the diagnostic and treatment protocols.

After drafting the *Minor Injury Regulation* (*MIR*), relying on advice from Ohlhauser, the transition team sought comments from the insurance industry and ACTLA. The team consulted with interest groups, disseminated regulations to various organizations and received numerous responses. The insurance industry objected to various aspects of the reform.

On March 3, 2004 Ohlhauser met with his core working group which agreed in principle with the process for diagnosing of injuries in categories of WAD injuries. They and other consulted experts supported the notion of early access to practitioners to receive an appropriate diagnosis and effective treatment and advocated early recognition of individuals who had alerting prognostic factors that would likely give rise to chronic problems.

Since Ohlhauser knew some practitioners may not have the interest or skills to effectively manage the injured person, he introduced the concept of an injury management consultant to provide early consultation where diagnosis was in question or the person was not progressing as expected. He concluded if those persons could be early identified, they could be moved out of the protocols into a multidisciplinary assessment process using the biopsychosocial model to address factors.

In April 2004 Ohlhauser provided a draft of the minor injury regulation for comment. He received feedback from IBC, CBA and ACTLA.

On April 20, 2004 Renner presented to the SPC an explanation of the draft minor injury regulation, diagnostic and treatment protocols (DTPR), accident benefits and insurance grid regulation. Ohlhauser presented the injury management system.

Ohlhauser advised the SPC of the steps to be taken if the patient has not fully recovered by 12 weeks. The injury management consultant could provide early consultation before that and after assessment recommend multidisciplinary assessment or interdisciplinary rehabilitation.

The target outcome for sprain, strain and WAD I and II injuries was expected to be 90% by 12 weeks, if properly managed treatment and care following the DTPR. Potential barriers would include the patient not participating in the recovery, the practitioner not following protocols, and lack of further support by insurers in a timely manner for the multidisciplinary assessments in rehabilitation when requested by the practitioner.

The SPC approved the Grid regulation on April 28, 2004.

At a meeting on May 4, 2004 the remaining regulations were deferred. Between this date and the next meeting certain service providers wrote to object to the proposed regulations.

On May 27, 2004 the SPC agreed to recommend Cabinet approve the following four regulations:

a. *Minor Injury Regulation*;
b. *Diagnostic and Treatment Protocols Regulation*;
c. *Accident Insurance Benefits Regulation*; and
d. *Insurance Grid Regulation*;

subject to some wording variation to allow public insurers into the marketplace, to establish a review committee to monitor the implementation of regulations and to include traffic enforcement and safety initiatives as part of the package.

Renner said the original purpose of the reform package was to benefit individual Albertans who were paying too much for their premiums and not being treated properly for their injuries. He left the file in May 2004.

On June 21, 2004 Cabinet approved the regulations which became effective October 1, 2004.

During 2004, AF prepared to implement the reforms and an interpretive guide for calculation of the grid premium. Two insurers were asked to assist in drafting the premium regulation which turned out to be a controversial process.

After the regulations were passed on June 21, 2004, Ohlhauser worked with staff of AF to address implementation issues as to the time to educate practitioners, develop and distribute interpretive materials and prescribe forms and develop qualification standards for injury management consultants and certified examiners in clarifying final procedures.

The *Diagnostic and Treatment Protocols Regulation* stipulated that it would be reviewed at least every two years. Three working committees met regularly from October 2004 to April 18, 2006. *Ohlhauser* was the main architect of the protocols that finally appeared in the regulations.

After claimants have exhausted the initial set of treatments, they are entitled to continue to receive medical benefits under Section B unless the insurer asks for an independent medical assessment and that assessment determines the treatments are no longer required. The initial set of treatments are paid directly by the insurer with no requirement of insurer approval.

The Alberta Insurance Rate Board (AIRB) (successor to AAIB), sets the Grid premium on an annual basis which operates as a maximum to be charged for insurance in a particular category.

Population of FA fell and AF expected FA's market share to continue to decline. Convictions for uninsured driving had grown by 18% from 2000 to 2003 but had fallen by 10% from 2003-2005.

There have been no Alberta closed claims studies between that in 1991 and report of Ms. Barb Addie in 2006.

The elements of the reforms were balanced as to cost and policy. The policy balance was conducted at the level of the transition team and, ultimately, the elected officials.

The government considered but did not proceed with the DTPR for injuries other than those covered by current reforms.

During the development of the minor injury definition and protocols there were consultations from certain insurers, IBC and ACTLA for feedback. Gartner admitted that the insurance industry, the trial lawyers, IBC and the brokers considered the consultation was

inadequate. At the date of his testimony he concluded there was much consultation, his view was the consultation was adequate and more would not have resulted in consensus.

The GOA imposed an "all comers rule" which, except for a small portion of the market, requires all insurers to sell market insurance to any applicant.

The effect of the Grid regulation and the "all comers rule" is that all drivers are entitled to a capped rate which is either the insurer's rate or the Grid rate set by the premium regulation. If the insurer does not want to provide insurance to an applicant, it refers the applicant to the risk sharing pool which was operated by the FA. The small portion of the market which is the exception is referred to as the "residual market" which is clearly defined in the regulations and provides that drivers with convictions or at-fault accidents pay the higher Grid rate. The FA continued to pay claims beyond 2004.

A review of the protocols was completed by October 2006 and provided to the Minister. At the trial date the GOA had no information as to whether there had been an improved cure period for minor injury victims from the reforms.

Since the cap was implemented, the health levy had gone up, premiums have gone down and no other funds have been injected into the system to fund increases in the health levy other than premiums.

GOA had not performed any calculations as to the amount of savings attributable to the application of the cap from April 1, 2005 to March 31, 2006.

Since implementation of the reforms, Albertans have seen reduction of premiums through the effect of the premium freeze, mandated reductions and the impact of the Grid system.

The insurance rate deductions decreased compulsory auto insurance premiums by 15%. AF had received few complaints from customers about unaffordable premiums, inaccessible coverage and unfair treatment by insurers.

AF was never able to determine whether auto insurers have been profitable as a result of their Alberta operations. No actuaries analyzed whether the protocol treatments added any costs to the system.

The GOA never performed an analysis as to the cost of benefits added back into the system for minor injury claims or the extent to which enlargement of Section B benefits would benefit the minor injury victims who would heal within 10 weeks of their accidents.

## Testimony of Medical Experts

The medical experts identified a number of ways that the existing tort system fails to promote healthy outcomes for the traffic injured:

a. adversarial dealings with insurers could aggravate stress and trigger unwanted negative psychological reaction;
b. patients would benefit from removal of that adversarial relationship for a period of time;
c. traditional compensation procedures are prolonged and highly frustrating for victims and do not promote good early treatment but often delay specialist care;
d. innocent victims considered the compensation system did not seem sympathetic. They found it unpleasant to go through a court experience. Their encounters with the legal system did not give them the apologies, concern or sympathy they felt entitled to;
e. their frustration related to the slow and arduous process, conducted in a way that conveyed no sympathy, even if liability was

admitted. They were frustrated with the long time it took to settle and settlement was generally seen as a relief;

f. it was not the money that it was important because it did not get them back to their pre-accident state but concerns were pecuniary losses which caused the difficulties and delays in obtaining recompense for them;

g. traffic injured want to get back to normal and are upset by obstructions and delays. It is the injury and disability that caused the distress, often exacerbated by legal procedures;

h. outcomes for chronic whiplash patients may be adversely affected by getting involved in the legal process;

i. likely the entire litigation process, often drawn out for years, may be an adverse factor and removing an interest or a convenience for pursuing of litigation process may actually reduce (numbers of) chronic care patient;

j. a change in the compensation system that makes compensation an automatically brief process would be helpful;

k. traffic injured are blameless in respect of the conscious choices they make following a collision in ways that lawyers, therapists the media, and others encourage illness behaviour that is, at best, maladaptive and at worst, grief driven;

l. studies showed that being in litigation can affect a person's health; and

m. many subjects said money was not the most important issue but rather they wish those responsible showed awareness of their suffering.

The medical evidence emphasized the importance of early treatment under well-designed protocols to optimize recovery from whiplash injuries:

a. the type and intensity of clinical care initiated in the first month after the injury is associated with the rate of recovery from whiplash injuries;

b. whiplash patients are one of the highest users of the healthcare system and such open ended and infinite possibilities feed the current state of excess expenditure;

c. these injuries were very expensive and warranted research and investigation into the protocols;

d. evidence supported early immobilization, early return to normal activity, early exercise and multi model treatment for acute whiplash. Data also showed multidisciplinary biopsychosocial rehabilitation with a functional restoration approach improves pain and function;

e. well-designed early interventions to provide information and psychologically and behaviourally informed advice can be valuable in improving satisfaction and outcomes; and

f. routine clinical care of WAD disorders is generally in line with the recommendations of the Québec Task Force.

## Evidence on Comparative Accident Compensation Models

Dr. Michael Trebilcock (*Trebilcock*) was qualified as an expert on and gave evidence about current comparative Canadian/American accident compensation law.

*Trebilcock* explained there are three theoretical classes of substantive values in discussing tort law and its alternatives, namely, individual responsibility, distributive justice, and affordability. He defined these values in the following terms:

a. Individual responsibility stresses deterrence and corrective justice and evaluates reforms in terms of whether it provides incentives to reduce accident injury. It also emphasizes imposing responsibility on drivers' morally culpable behaviour for violating individual autonomy and to restore the injured person as far as possible to pre-injury condition.
b. The distributive justice perspective views accidents as an inevitable by-product of urban society and does not expect tort economic incentives to impact accident causing behaviour or expect corrective justice components will affect behaviour because of the very existence of automobile insurance. This perspective argues that accident costs should be broadly spread to a general class of activities and horizontal equity requires that all persons similarly financially impacted should be similarly treated.
c. This means that alternatives to tort should be evaluated against the capacity to spread risks and provide meaningful compensation or low-cost insurance expeditiously to traffic injured to minimize the financial impact on their lives and to facilitate rapid and effective rehabilitation.
d. In tort compensation models, first and third-party automobile accident insurance is compulsory up to some minimum coverage floor and insurance costs are an unavoidable cost of driving. Cost will be of significant social importance given its potential regressive impact on low income drivers and its impact on physical mobility which is important in economic and social relationships. For those to place a high value on this objective, auto compensation models that minimize private and social transaction costs, and as a result the premium costs, are most attractive.
e. Auto insurance compensation systems must balance these three classes of values which means trade-offs are necessary.

*Trebilcock* outlined the comparative compensation systems with these comments:

a. In the United States nearly half of the states adopted compulsory no-fault models while the others retained a traditional third-party tort model. For those that adopted compulsory no-fault models, most were threshold systems that precluded a tort suits below a defined threshold, either monetary or verbal.
b. Those threshold models which are verbal relate to the severity of the injury. These models are vulnerable to medical expense padding to surmount the threshold and the effects of inflation. Some no-fault models have add-on regimes that provide first party no-fault benefits in addition to tort entitlements. The no-fault benefits vary widely between the various threshold and add-on regimes. In all U.S. threshold models claims for non-pecuniary damages below the verbal or monetary threshold are prohibited. This pattern is replicated in Canada.
c. Alternatives to the traditional tort model in automobile insurance context entail either a supplement or a replacement of tort. Elective choices schemes are more complex and adopted only in a small number of jurisdictions. Each option has many variations in theory and practice.
d. As to the trade-offs necessary to balance the three classes of values, the need to contain administrative costs and premium increases to acceptable bounds may elevate affordability to a higher priority over the abstract notions of distribution of justice or deterrence.

As to the achievement of the goal of individual responsibility/deterrence *Trebilcock* noted that:

a. Early studies of the Québec pure no-fault system indicated an increase in accidents which was attributed to the flat rate premium structure initially adopted which permitted certain high-risk drivers previously priced off the highway to continue to drive. Thus on this evidence, the tort model would achieve the deterrence goal better than a pure no-fault model.
b. The goal of corrective justice is well achieved under tort in that most auto victims with valid claims actually bring claims and achieve compensation, however, it did not well serve the other feature of corrective justice goal because there was overcompensation of many small claims and undercompensation of many large claims. Threshold, add-on and elective models insulate negligent drivers from costly consequences of their actions.

As the achievement of the goal of distributive justice, *Trebilcock* referred to a number of sources showing that the traditional tort model overcompensated for pain and suffering from minor injuries:

a. Many American and Canadian studies demonstrated that the tort system did not perform well in achieving the goal of distributive justice. In particular Canadian and American studies in the 1960s found that fewer than half of traffic injured received any compensation from tort. Recent U.S. evidence showed that between 1/3 and 1/2 of claimants would receive nothing under tort because there was no negligent driver or their own negligence barred recovery.
b. The *Osborne Report* showed that most paid claims were for minor injuries and 46% of all liability claim payments were for non-pecuniary damages, a pattern confirmed by U.S. data.
c. A 1991 *Rand study* reported that under traditional tort, traffic injured with economic losses less than $5,000 received compensation from all sources that averaged 2 to 3 times their economic losses while injured persons with much higher economic losses such as $10,000-$25,000 received compensation equal to just half of their economic losses.
d. The same pattern appeared from a 2001 study which found that 61% of claimants claim for only soft tissue strains and sprains and receive 39% of the total settlement amounts and 61% of total settlement amounts were for pain and suffering.
e. A 2005 *Newfoundland Public Utility Board (NFLD PUB) study* found that of total claim payments, 60.4% were for pain and suffering and 74% had at least one injury described as a sprain or strain of the neck, back or other area or a knee or shoulder injury and these claimants received 56% of total settlements. The NFLD PUB concluded that while most options did not lower insurance premiums, a higher deductible limit resulted in the greatest estimated savings for consumers.
f. A Nova Scotia closed claim study of 2002 found that 67% of total settlement amounts were for pain and suffering and 70% of claimants claimed only for soft tissue strains and sprains of the neck, back or other body parts and received 56% of total settlement amounts.
g. An American authority stated that automobile claims mostly constitute claims for soft tissue injury such as sprains and whiplash. These injuries are the most difficult to diagnose and at the same time there has been a drop in objectively diagnosable hard injuries such as broken bones. In tort, claimants seek to maximize their litigation recovery and the magnetic pull of potential tort awards is seen in the ratio of soft tissue injuries to hard

injuries in states with tort systems. California traffic showed about 250 soft tissue injuries for every 100 hard injuries. In Michigan the ratio is 70 to 100 because claimants have less incentive to run up medical bills.

With respect to affordability, *Trebilcock* said pure no-fault schemes entail the most modest premium level increases. Add-on schemes are quite costly. Threshold schemes moderate premium increases. Other no-fault schemes reflect lower administrative costs compared to tort states. Where the tort system plays a large role, administrative costs are highest because it is an adversarial system with lawyers, claims adjusters, courts and experts.

*Trebilcock* explained that much auto insurance/tort reform is driven by public concern over escalating auto insurance premiums. No one scheme achieves all three goals better than other models and thus trade-offs are required across all three values. He elaborated with the following points:

a. Almost all models that have adopted some form of no-fault compensation reveal that the more generous the no-fault benefits regarding medical and rehabilitation costs and economic losses, the tighter are the constraints on recovery of non-pecuniary loss, including absolute prohibitions. *Trebilcock* explained that this is most evidenced in worker's compensation schemes and auto insurance no-fault systems.

b. *Trebilcock* then gave explanations for the need for a trade-off. One reason is the need to contain administrative costs and premium increases to acceptable bounds. Another is conventional wisdom that consumers display a lower willingness to pay for non-pecuniary damages mainly because money is less likely to replace non-pecuniary losses.

c. This trade-off is often found in no-fault jurisdictions, whether workplace or auto accidents. He noted even under tort models in Canada, caps on non-pecuniary general damages were established by the Trilogy in 1978 to the limit of $100,000 Canadian indexed to the Consumer Price Index. In this respect the Supreme Court of Canada adopted a distributive justice perspective stating that there must be some limit on non-pecuniary damages.

d. Non-pecuniary losses cannot be made good with money and money is not a good substitute for the loss. Hence, few parents buy insurance against the loss of their child's life because even a large sum of money would not bring the child back. That is why when consumers have a choice, they do not purchase insurance for the kinds of losses that money cannot make good.

e. To keep insurance coverage reasonably affordable it must be recognized that citizens will not pay as much for insurance to cover non-pecuniary losses as they will for pecuniary losses.

f. There is a long-standing view among policymakers, including judges and academic commentators, that non-pecuniary damages are not the same as pecuniary losses.

g. Another more pragmatic explanation is that non-pecuniary losses are by definition extremely difficult to verify and quantify. It is difficult for any external body, including a court, to verify that a person's feelings of stress, discomfort or depression exist at all, and when it does, what is the proper monetary amount for compensation? Pain and suffering may be a real loss but the issue is what money can do about it.

h. The problem of verifying its existence and its qualification introduces significant transaction costs into the tort insurance regime which translates into higher premiums and issues of affordability.

i. The transaction costs of establishing whether an injured person is off work and what are his income losses are trivial. But if the person claims headaches, depression or travelling anxiety, it is disproportionately costly to the calculation of losses to ascertain the truth of such complaints and what amount of compensation should be put upon it.

j. This problem introduces disproportionate transaction costs in a compensation system. These disproportionate transaction costs arise through the process of verifying and quantifying non-pecuniary losses relative to pecuniary losses which include the costs of lawyers, medical experts, claims adjusters, and running a court system, which are higher than the cost of evaluating pecuniary losses.

k. Most compulsory no-fault models have adopted a threshold system which precludes tort suits below defined thresholds. Thresholds vary dramatically with some monetary, relating to the level of medical expenditures typically in the range of $1,000 to $5,000 and others verbal, and relating to the severity of the injury. Monetary thresholds are vulnerable to medical expense padding to surmount the threshold and effects of inflation. As well, normal effects of inflation mean that more claims surpass the threshold even without padding.

l. Most worker's compensation schemes provide no, or very limited, benefits for non-pecuniary losses. Automobile no-fault systems reflect the same thinking which is that distributive justice ensures that all traffic injured, whether negligent or otherwise, have their pecuniary losses generously covered and, in order to make such a system affordable, requires a trade-off on the non-pecuniary loss component.

*Trebilcock* added these conclusions:

a. On the distributive justice issue studies show that paid claims perform better under no-fault and under tort a high fraction of claims relate to low levels of economic losses often less than $5000. Under tort minor claims are over-compensated and severe claims are under-compensated. 50 to 60% of total premium dollars go to non-pecuniary losses. From the viewpoint of distributive justice, there is no justification for such over compensation and under compensation.

b. To keep insurance coverage reasonably affordable, recognition must be given to the realities that consumers will not pay as much for insurance covering non-pecuniary loss as they will for pecuniary losses.

c. Empirical studies show that administration costs are the highest in a tort model because it is an adversarial system with lawyers, claims adjusters, courts and experts. Because the public is concerned about increased premium costs rather than the abstract issues of distributive justice or individual responsibility, the affordability issue cannot be dismissed.

d. Tort awards are a magnet for soft tissue claims and by adding these allegations, claimants and lawyers in threshold systems try to inflate the claim above the threshold and thereby double dip from the no-fault and fault benefits.

e. In summary, pure no-fault schemes entail the most modest premium levels in increases. Add-on schemes are quite costly. Threshold schemes moderate premium increases. Other no-fault schemes reflect lower administrative costs compared to tort states. Administrative costs in the tort system are

the highest, because it is an adversarial system with lawyers, claims adjusters, courts and experts.

f. The current Alberta model with the MIR is a threshold no-fault system.

### *Evidence on Canadian Insurance Industry Study*

IBC under took a study of the Alberta reform. The purpose of the study was to benchmark and evaluate the implementation of the treatment protocols. It was managed by Barbara Sulzenko-Laurie (*Laurie*) who was qualified to give expert evidence about the development and execution of surveys and studies to measure and evaluate health care service policy initiatives. The methodology of the study was peer reviewed and endorsed by an independent consultant.

The findings of the IBC study concluded:

a. 30% of minor injury victims were represented by lawyers. After the reform, the percentage dropped to 15.5%. It was a concern that more than 40% of soft tissue claims remained open at six months.

b. *Laurie* thought the 90 day target has not been achieved because the public was not familiar with the protocols and what to expect. She did not agree that a closed claim was a good proxy for recovery as many might not close their claims in fear of a flareup or were anticipating the results of the subject litigation.

c. IBC during the course of the reform suggested an 18 month cut off for functional limitations would impair full recovery and prolong medical rehabilitation treatment. *Laurie* agreed. She thought imposing a time limit for consequences of an accident would incentivize claimants to remain focussed on their injury condition as opposed to recovery and return to their normal activities.

d. *Laurie* considered the rewards of the tort system encouraged claimants, their legal representatives and medical rehabilitation providers to prolong the recovery and to transform an injury into one requiring more complex care and a significantly longer duration. That condition can develop if appropriate care is not provided at the outset including appropriate education as to the nature of the condition.

e. IBC viewed the basic definition of minor injuries as too narrow and avenues created for escaping the definition were too easily crossed to serve the purpose of limiting non-pecuniary awards. *Laurie* recommended other injuries to be included in the minor injury definition such as contusion, lacerations, chipped teeth and the like.

f. IBC was concerned about meeting the objectives of the reform. One component of the reform had to do with reducing premiums. Another had to do with erecting a grid to protect drivers from high rate increases regardless of their experience. Another element of the reforms was to increase the maximum for no-fault benefits. All reform elements had to fit together.

g. IBC was concerned that permitting the number of self-limiting minor injuries to be treated as non-minor would increase the opportunities for stacking the awards. Although the reforms had not achieved 90% recovery in 90 days, the changes since the reform were already dramatic. There was much academic evidence that chronicity of conditions is often due to pending legal proceedings involved. This is a factor in prolonged, delayed recovery.

h. After the Alberta reforms, there was a significant decline in the diagnosis of WAD 1 and other sprains and strains. There was a significant increase in WAD II claims. There were some economic incentives to diagnose WAD IIs. The numbers getting treatment in the benchmark increased from 76% to 91%.

i. While there was no difference in the rates of claims closures for the first 12 weeks, the costs of treatment were increasing. Although the numbers of treatment were not increasing, price per treatment was increasing. Claims closures in 26 weeks were substantially increased. 30% of claims were closed in six weeks and 60% of claims were closed in the second post reform study. The rate of disability claims fell from 17 to 11%. The evidence of disputing cases declined from 20% to 7% in the second post reform study.

j. Closing a file does not assist recovery but is it is a consequence of recovery being impeded by legal proceedings, which could be a factor. *Laurie* opined that receiving a capped award of $4,000 could improve the patient outcome. She looked at the incidence of disability claims which were significantly down so suggested a relationship.

## Actuarial Evidence

Evidence of some of the actuaries who testified in *Morrow* was discussed above. Some additional points in the evidence are outlined below.

Mr. Ted Zubulake, GOA Actuary, produced a report that said:

a. IBC studies in New Brunswick and Nova Scotia and his own study of Newfoundland and Labrador found that traffic accident soft tissue strains and sprains accounted for a high percentage of bodily injury liability claims and claims payments and most were for pain and suffering;

b. at the time the GOA was considering automobile insurance reforms, auto claims costs were increasing primarily due to higher minor soft tissue injuries;

c. in his opinion, the grid rating system, the new residual market and the risk sharing pools would help insured drivers be provided with insurance at predicted premiums and would mitigate availability and affordability concerns;

d. he thought increases in Section B accident benefits for medical and rehabilitation compensation from $10,000-$50,000 would reduce bodily injury liability costs by reducing the injured person's out-of-pocket medical and rehabilitation expenses;

e. he opined from his report and studies reviewed that bodily injury coverage financial results contributed to the insurer action between 1986 and 2004;

f. the *Newfoundland and Labrador study* dated March 2002 reported 67% of claims came from soft tissue injuries and sprains of the neck and back with no other injuries;

g. KPMG found that of 1441 claims of combined close claim studies, 1077 were for minor injuries which constituted 74% of the claims examined as ultimately defined by GOA; and

h. he opined that the $4,000 cap would moderate future annual increases for claims costs and bodily injury liability coverage.

Dr. Ron Miller added these comments:

a. In 2003, before the reforms were effected, claims were disappearing potentially because consumers receiving premium increases of 10% or more may have become conscious of the proposed reforms, the issue of affordability and knew that reporting an

at-fault claim would trigger a large premium increase. He had seen a similar pattern in other jurisdictions, such as New Brunswick and Ontario, showing that when there are dramatic premium increases, claims disappear from the system. He found strong statistical evidence that the third liability claims costs declined by 37%.

b. Since the reforms in January and October 2004, third-party liability bodily injury costs declined dramatically.

c. From his analysis of the Alberta experience to December 31, 2005 he thought it plausible (but admittedly speculation) that post reform some minor whiplash injury claimants were no longer motivated to seek settlement or the protocols were working as intended or both, such that claimants were exiting the system faster or not entering it. In any case this effect leads to a one-time reduction in frequency and severity for both third-party liability.

d. He thought another plausible conclusion was that if claimants and their lawyers climb the learning curve, those who had left the system may begin to re-enter it and all claimants find ways to increase compensable damages resulting in a one-time change to a positive forward trend in claims frequency and claims costs.

e. If *Bill 53* and related initiatives were declared illegal, he predicted adverse economic consequences for insurers and consumers, mainly increased costs stemming from higher claims costs. There would be a one-time aggregate additional all industry claims cost to Alberta insurers at the beginning of 2008 of about $630 million or $325 per car insured.

f. There would be an aggregate number for all business classes of about $800 million. None of these costs would be recoverable from future premiums. The premiums as of 2006 would be increased by 15 to 20% without recruitment for sunk costs from prior periods.

g. Declaring the reforms illegal would put costs back in which would result in an average increase in premiums of 15 to 20%.

h. Because the $4,000 was not separated out in the Statistical Plan, he could not separate easily its effect on the results. He agreed it was plausible but did not believe the 2004 and 2005 industry profits were greatly and unnecessarily accelerated by the product reform.

Ms. Barb Addie was retained January 20, 2006 to perform a closed claim study to determine whether New Brunswick and Nova Scotia closed claim data were a reasonable proxy to estimate the impact of the reforms of 2004 being considered by the Alberta government. Her conclusions were:

a. It was reasonable to use that data to estimate the reform costs. Comparison to the 1991 closed claims study from AAIB showed that the percentage of pain and suffering was very similar among the three surveys. The underlying data were adjusted for inflation to bring them to the same point in time.

b. The study showed that 62% of claimants suffered soft tissue injuries only and received 43% of the settlement amounts. Another 29% received settlement amounts for soft tissue and another injury. 91% of all claimants suffered some form of soft tissue injury. These claims represented 93% of the settlement amounts. 71% of the total settlements were for pain and suffering.

## D. Analysis Of Alberta Auto Insurance Reforms

Auto insurance reform has a short history in Alberta, driven primarily by premium instability. As current premium levels are again a policy concern, it has become clear that long-term stability will not be possible as long as bodily injury loss costs remain uncontrolled in a tort environment. In addition, recent advances in rehabilitation medicine indicate that the tort environment leads to poor health outcomes for traffic injured Albertans. Analysis of these points follows.

### *Alberta Automobile Insurance Board, A Study of Premium Stability in Compulsory Insurance* (September 12, 1991)

As noted in 1991, actuarial evidence presented to *AAIB* showed:

a. From 1972 to 1989, loss costs had increased dramatically.

b. The rise in loss costs, i.e. 12.9% between 1988 and 1990, more than twice that of the Consumer Price Index, was caused mainly by the rate of increase of bodily injury loss costs.

c. The third-party liability premium increases in 1989 and 90 were not yet sufficient to bring premiums into balance with the current expected costs.

*AAIB* key findings included the following:

a. Claimants with minor injuries are overcompensated in the tort side of the system relative to all other traffic injured. Claimants with catastrophic injuries are undercompensated in the tort side relative to all other traffic injured.

b. At-fault claimants are inadequately compensated for their economic losses relative to tort claimants.

c. There were structural deficiencies in the delivery of benefits in the current system.

d. All payments required under the current system are subject to delays.

e. The then current data proved that there was a pricing problem in the system which would persist in the future without some measures to counteract it.

f. Loss costs would continue to increase because of continuing increases in frequency and quantum of claims unless bodily injury costs were curtailed and effective cost saving measures were undertaken.

The Committee observes that despite the passage of three decades, the above problems identified in the Alberta hybrid tort/no-fault model remain present at this date.

Further the Committee observes that Professor Trebilcock's testimony in the *Morrow* case in 2008 remained consistent with the advice he provided to the AAIB in 1991.

Accordingly, the *AAIB*'s conclusions on the alternative models remain applicable:

a. Cost savings would be higher under a pure no-fault model similar to that in place in Québec than would be attainable under any other model. The pure no-fault model was superior in producing lowest premium costs and would provide the highest degree of operational efficiency of all models.

b. Administrators in Québec reported a high degree of consumer satisfaction, although trade-offs were initially necessary and did not meet with approval of all groups of consumers.
c. Cost savings would be higher under the threshold model implemented in Ontario which resembled the Michigan model and had greater potential for premium savings and price stability in the long term.
d. An elective or choice model such as that proposed in 1989 to the Ontario Automobile Insurance Board would result in increasing divergence of average premiums between the two options which would cause all drivers to choose no-fault and, in effect, convert the system to a pure no-fault model.
e. The tort model scored very poorly on the attainment of low premium costs and last on compensation coverage and operational efficiency.
f. There was overcompensation in cases of minor injuries and undercompensation in cases of catastrophic injuries. Some tort claimants were probably overcompensated for their wage loss as claimants represented by lawyers usually received higher recovery than those that did not. There was an unusually high inflation rate in bodily injury claims and some delays in receipt of compensation on the tort side.

However, certain other of the *AAIB*'s conclusions and recommendations did not stand the test of time. For example, auto insurance compensation history elsewhere and Alberta's own auto insurance history has shown that the pricing problems were not adequately met by implementing modest tort reforms to attain premium stability in the short term, to reduce litigation and to curtail the inflationary effect of claims costs over time.

The AAIB's suggested implementation of a threshold no-fault system with an enhanced no-fault benefit package and restricting the right to sue to only the most serious claims was proven by the Ontario experience to have been a failed enterprise. Instead, the history in most other jurisdictions have produced compelling evidence that certain of the problems with the tort system are irreparable.

## Revisit of the 1991 AAIB analysis (with 2020 hindsight)

*AAIB*'s prediction that loss costs would continue to increase because of continuing increases in frequency and quantum of claims unless bodily injury costs were curtailed and effective cost saving measures were undertaken has been proven correct in the interval from 1991 to the present.

Both *Osborne* and *AAIB* rejected the pure no-fault model in the expectation that preserving tort in a threshold no-fault model could provide long-term premium stability. This expectation was later proven to be unfounded. Between 1991 and the present, both Saskatchewan and Manitoba converted to pure or nearly-pure no fault models with the predictable consequences of higher cost savings, lowest premium costs and highest degree of operational efficiency of all models. Moreover, there is no evidence in those provinces of significant consumer dissatisfaction.

In hindsight, the best explanation the Committee discerns for the *AAIB* conclusion to reject consideration of the pure no-fault model is that there prevailed in the late 1980s and 1990s a lingering suspicion over the concept of accident benefits so that there was resistance to the broadening of their application. As well there prevailed steadfast belief in the tort precepts that wrongdoers should pay and the court system can best evaluate and measure accident losses, including non-pecuniary general damages.

As well, *AAIB* and *Osborne* both were strongly influenced toward the intuitive belief that these concepts were not to be minimized at the expense of other goals of auto insurance compensation models. Accordingly, if rebalancing was required, both concluded that it should occur on the no-fault side of the system, with only minor reforms to ancillary aspects to the tort model.

These are the explanations the Committee finds for the preference of *Osborne* for a continued tort model even in the face of his candid conclusions that:

a. Continued use of tort on its own cannot be justified on compensation grounds.
b. The tort system provides a disincentive to the public interest goal of rehabilitation for all traffic injured and which cannot be realistically achieved through the tort system.
c. He found no credible evidence that eliminating tort law for a no-fault alternative would increase accident frequency, that no-fault alternative models caused significant adverse effect on accident rates or that tort liability exerted a statistically measurable effect on the level of safe driving.

The Committee concludes that reports of *Osborne*, *AAIB* and the experience of the reforms in New South Wales in 2000 all reinforced the belief that if the benefit resources were simply reallocated, claimants would seek to recover only what was needed. The bodily injury loss costs would then cease to escalate, but instead stay stable and predictable in future, so that, in turn, premium levels would do the same.

Despite its own findings that the pricing problem in the auto insurance system would persist unless some curtailment of tort compensation occurred, the AAIB preferred the strategy of gradual reduction of tort components over time to avoid the shock to participants in the system of a comprehensive one-time transformation.

This Committee concludes that the AAIB viewpoint was likely arrived at in reliance upon both the *Osborne* conclusions, the Ontario government's decision to implement a threshold no-fault model, and because it accorded with its own concerns about the difficulties in undertaking legislative reform.

If as the Committee concludes, the experience in Ontario from 1990 to the present is of educative value on this front, it follows that gradual transformation of auto insurance systems or efforts to preserve all components to satisfy all participants is not an effective strategy for securing long term affordability, availability, stability and sustainability of reasonable premium levels.

## Process of 2003 Alberta reform

### Premium Increases

As noted, at the trial of *Morrow v Zhang*, there was no dispute among the actuaries' testimony as to the cause of premium increases between 1986 and 2004, recited below for ease of reference:

a. the average pain and suffering cost for minor injuries in 1990 was almost $3,000 whereas in 2003 the average pain and suffering cost for minor injuries was almost $17,000 in 2005 dollars;

b. this increase was in excess of 10% per year;

c. minor injury accident related injuries such as soft tissue strains and sprains represented a high proportion of bodily injury liability claims costs;

d. bodily injury coverage financial results contributed to the insurer action between 1986 and 2004;

e. between 2000 and 2003 auto insurance premiums sharply increased and coverage became less available mostly due to escalating bodily injury claims costs, more particularly minor soft tissue injury claims costs;

f. from 1984 to 1999 the average cost of third-party liability bodily injury coverage was increasing at a steep rate compared to the all Canada CPI;

g. from 1994 to 1998 claims frequency increased on average by about 2 to 3% per year while claims severity increased by 7.3% per year resulting in an increase in claims cost per car on average of 9.8 %, while CPI inflation averaged only 1.6% per annum which was likely the cause of the increase in rates, consumer dissatisfaction and resulting reform measures;

h. from 1999 to 2001 claims costs decreased and then spiked to the highest point in 2004;

i. in 2000 the loss ratios at 100% and 110% were the result of the increase in bodily injury claims costs not being offset by sufficient premium increases;

j. between 1986 and 2002 bodily injury claims were rising faster than CPI by 28%;

k. between 1986 and 2002 bodily injury claims per 1000 vehicles had increased 72%, thus significantly contributing to premium increases; and

l. auto insurance premiums in 2002 and 2003 increased mainly because bodily injury costs were rising at about 120% more than CPI. In hindsight, if insurers had realized that was occurring at that time consumers would have had to pay 45% more than CPI in that period. This trend, if it continued, would promote unaffordable auto insurance.

## Developing Concerns

The problems emerging in the auto insurance system were reinforced by the *AAIB* findings in 2002 which noted:

a. a 100% increase in injury loss costs over the previous 10 years;
b. between 1986 and 2002, bodily injury claims costs per vehicle had tripled while property damage claims grew only 23%; and
c. there was nothing in the system to control bodily injury loss cost increases.

The problems emerging in the auto insurance system which began to concern Alberta Finance (AF) and the Government of Alberta (GOA) in 2002 included the following:

a. In 1995 damages awarded for most soft tissue injuries ranged from $6,000 – $10,000. By 2000 awards averaged $24,000 and at 2002 awards averaged $29,000. Those increases revealed that soft tissue injury damage awards were increasing at a higher rate than average and were affected by inflation.
b. Premium increases, on average, were 11% in 2002 and 13% in 2003 and even larger for high-risk drivers and those under age 25.
c. Comparisons with other provinces showed that Alberta had much higher premiums than public systems for inexperienced young drivers and risks such as drivers with lapses in coverage. Rates approaching $7,000 were unaffordable to many drivers.
d. A reduction in capital translated into declining coverage and accessibility problems for consumers.
e. The Office of the Superintendent of Financial Institutions reported that the financial position of the property casualty industry had been deteriorating for several years due to rising claims costs, not matched by increases in premium revenue, especially in auto insurance.
f. AF also identified a problem with inadequacy of Section B benefits dating back to the 1991 *AAIB report*.

The Committee considered it important to reflect on the actuarial evidence that the average pain and suffering costs for minor injury claims increased from approximately $3,000 in 1992 to approximately $17,000 in 2003 in 2005 dollars. This sharp escalation in amounts over a short interval was replicated in information from the GOA showing that between 1985 and 2000 the average soft tissue injury awards escalated from $8,000-$29,000. These examples starkly demonstrate the profound effect of tort producing overcompensation of minor traffic injuries, a problem identified in 1991 by the *AAIB*.

## Political Process

The Committee considered the examination of the reform process in Alberta between April 2003 and June 2004 to be instructive for several reasons. First, it revealed how the competing goals to be served under any auto compensation system create an ongoing polarizing effect on the views of the participants, the service providers, the legislators and those charged with implementation. Second, the process demonstrated the challenges of forecasting the costs and cost savings of various alternative solutions which involve health outcomes and costs of a mandatory product. Third, it illustrated that modifying the proposed goals during a reform process with the aim of balancing all the competing views of various members of the public can have unintended adverse consequences.

For example, the Committee noted that articulated purpose of the reform seemed to shift during the course of the process, beginning with:

a. the reform goal to make the cost of insurance more affordable and to pass the savings onto the consumer, then
b. to solve the problem of young drivers finding insurance unaffordable and to reduce premiums that were unacceptably high for some drivers without making other drivers pay those costs, then
c. to reduce premiums especially for young drivers, seniors and FA candidates, then
d. to balance premiums against claims costs and consider the long-term viability of the auto insurance industry, then
e. to reduce premiums and increase accident benefits funded by the savings from the proposed cap and the *Bill 33* tort reforms, then
f. to avoid any changes on the premium side that would unfairly affect the ability of traffic injured to make claims, then
g. to allow only minor strains and sprains that heal quickly to be subject to a cap and to develop the definition in consultation with organizations representing injured persons, consumers, insurers, lawyers and healthcare professionals, and then
h. to benefit individual Albertans who were paying too much for their premiums and not being treated properly for their injuries.

Since the definition of minor injury was continually restricted over the course of the reform process, the original intention to cover a large number of traffic injured was lost and the compromise reduced the number of persons affected by the cap, which in turn reduced the premium savings. In the end, the amount of the intended savings could not be calculated.

The Cabinet's freezing premiums and legislating rollbacks on October 30, 2003 produced $25 million in premium reductions for the last two months of 2003 and $100 million for 2004 and, ultimately, the insurers were required to absorb the cost of the freeze.

Although the GOA on November 19, 2003 announced that the reform package would save $250 million, the GOA officials admitted it was harder to show at the end of the process what the total savings would be.

The GOA did not determine the cost of benefits added back into the system for minor injury claims or the extent to which enlargement of Section B benefits would benefit the minor injury victims who would heal within 10 weeks of their accidents. Nor did it calculate the amount of savings attributable to the application of the cap from April 1, 2005 to March 31, 2006.

Since October 1, 2004 the AIRB had decreased premiums in mandatory coverage by 15 – 18%.

The population of FA had fallen and convictions for uninsured drivers fell by 10% from 2003 to 2005.

Since the cap was implemented, the health levy increased but other than premiums no other funds were injected into the system to fund increases in the health levy.

The Committee also observed that the 2004 Alberta reform considered but rejected implementation of the elective/choice model referenced in the 1991 *AAIB Report*.

## Revisit of *Morrow* expert evidence (with 2020 hindsight)

The *Claims and Costs Study for Treasury Board and Finance* dated November 2019 (*Cheng Claims and Cost Study*) revealed that the automobile insurance premiums continued to increase between 2004 and 2019 with a short period of premium leveling after the 2004 reform was implemented. These findings would suggest the auto insurance reform of 2004 was insufficient to produce premium stability in the long term.

From the health experts' evidence there emerged three consistent new trends:

a. tort systems undermined the early and effective recovery of non-catastrophic traffic injured;
b. the introduction of uniform diagnostic and treatment protocols without adversarial components improved health outcomes of traffic injured; and
c. those diagnostic and treatment protocols introduced in Alberta in 2004 were in line with innovations in treatment of traffic injured in other jurisdictions which showed better health outcomes with removal of tort components in auto insurance systems.

These trends evidenced emerging scientific data from other no-fault jurisdictions that were able to make comparisons of health outcomes after reduction of tort components and clinical experience of health practitioners as to the adverse effect on health recovery in a litigation environment.

The emerging health evidence since 2000 to the present date, which strongly indicates that tort undermines health outcomes for traffic injured, bolsters the GOA decision in 2003 to select against an elective/choice model for Alberta.

The Committee notes that as the 1991 *AAIB Report* recommended reforms proceed along a continuum, and that Professor Trebilcock described the 2004 reform as a threshold no-fault model, it follows that the next alternative model for consideration is the pure no-fault model.

## Comparison of Alberta, New South Wales and Ontario Reform Processes

The Committee compared the auto insurance reform processes in Alberta in 2003 with those in New South Wales from 1999 to 2017 and Ontario from 1990 to 2017.

### Alberta 2003

As noted, the legislative reform process in Alberta ended with a compromise. The recommendations of the implementation team were continually modified and required to be undertaken with continuous consultation with external service providers. The media commentary inflamed the views of the public, the elected officials and the Premier which resulted in further restrictions on the proposed reform. At the end of the legislative process, none of the service providers pronounced themselves satisfied with extent of consultation or the result.

As noted elsewhere, this pattern of political compromise also occurred in Nova Scotia.

These legislative reform experiences in two different Canadian provinces in a similar time period might lead to the conclusion that this is the process to be expected to unfold when transforming an accident compensation system for traffic injured and insured motorists.

However, the New South Wales reform of 1999 proves that an alternate method of system redesign by a select group of auto insurance subject matter experts is possible. Given the first-hand experience with this reform, the Committee concluded that it was worth comparison.

### New South Wales 1999

As noted, the facilitator engaged a working group of knowledgeable participants of the compensation system which produced a redesign of the New South Wales auto insurance model in a period of about 60 days (from February to March 1999).

The working group was comprised of representatives of all the involved service providers. The members began with an agreement to examine together the entire accident compensation process starting with the date of a traffic injured accident and concluding with the process of renewal of auto insurance premium. The object of the enterprise was to insert features which benefitted the traffic injured and motorists and to eliminate those that did not.

There was no involvement of elected officials during the redesign process. There was no consultation with any service providers outside the working group during the reform process. There was no involvement of the media and no comment to the public during the process.

The working group challenged its members to analyze and reanalyze the developing reform model, taking into account how each proposed improvement would impact other features, so that it continued to build and refine a cohesive design that contemplated each service provider interacting with the traffic injured and policyholders until it had arrived at specific set of reforms which eliminated extraneous processes detrimental to the traffic injured experience and produced the desired amount of premium reduction. That proposed premium reduction was verified by the actuaries in the working group.

The intention was to establish mechanisms to enable the injured person to proceed along a recovery path in a collaborative environment with health providers, insurers and subject matter experts in place of the litigation features of the existing model, such as between the health providers and the injured person, and between the insurers and the injured person.

Only after the traffic injured had achieved recovery as far as possible were the future income and treatment claims evaluated by an independent panel of claims assessors. The intention was to eliminate the involvement of duelling experts and advisors, which even health providers advocated.

Importantly the redesign provided for elimination of all non-economic loss awards for persons whose injuries did not exceed 10% permanent impairment of the whole body.

The redesign established as its primary goal the need to provide early and effect of rehabilitation to traffic injured and eliminate as far as possible pre-existing adversarial processes. It established an independent medical review panel to provide conclusive determinations of the extent of the injury and future health requirements. After this panel had provided its determinations, the traffic injured could proceed to a second expert review panel to determine the necessary financial compensation for losses caused by the accident. The design then provided for recourse to the court for any disagreement with the panel findings.

The redesign also provided for enhancing private sector competition by relating the premium to more effective risk rating.

All members of the working group endorsed the final design.

The blueprint presented to the legislature to enact had been approved by the working group on the understanding that it would not be minimized or modified by the usual process undertaken by elected representatives. In the event, it received passage with only minor amendments by June of 1999 and was implemented by October 1999.

The medical and claims assessment panels were overseen by a principal claims assessor who was a statutory officer with legislative responsibilities pertaining to the assessment of claims. There was a roster of approximately 150 externally contracted medical assessors.

Although tort lawyers, whose roles were the most substantially reduced under the reformed model, expressed dissatisfaction with the reform, the remaining service providers, supported the changes.

According to reports the reform effected savings of $300 million (Au) annually and in the first ten years following, also produced reliable evidence of improved health outcomes for traffic injured. As of 2017 these features of the current model had been reported to be successful.

## Ontario 1990-2015

The threshold no-fault model implemented in 1990 in Ontario began to reveal problems by the mid-1990s. The governments in 1994, 1996, 2013 and 2015 repeatedly attempted to resolve these problems by legislative changes both on the tort and accident benefits side, all of which by 2017 according to *Marshall* constituted a series of failed attempts to control premium costs.

# Conclusions

From the analysis of the history of Alberta automobile insurance reform when compared to other similar hybrid tort models, the Committee drew the following lessons for Alberta:

a. the various experiments undertaken by hybrid tort/no-fault auto insurance models from 1990 to 2017 in Canadian provinces and elsewhere when compared to pure no-fault models clearly show that the pure no-fault models have performed more effectively in terms of premium stability;

b. those jurisdictions that endeavored to balance both tort and no-fault accident benefit components in one traffic accident compensation model were unsuccessful in delivering affordability, availability, stability in premiums in the medium and long term;

c. auto insurance reform models that preserve a tort component or tort components have been criticized for the adverse effects upon the health outcomes of traffic injured;

d. pure no-fault models reduce recovery times, enhance health outcomes, expedite claims resolution for the benefit of the traffic injured and reduce premium costs for the benefit of insured motorists;

e. a legislature contemplating a fundamental reform of its automobile insurance system should recognize that a broad consensus among all constituents, including both the traffic injured and the policy holders and service providers is unlikely to be achieved; and

f. a legislature which undertakes a fundamental reform of its automobile insurance system should expect to receive some initial opposition from various sectors of the public because such a transformation will be disruptive to certain service providers whose roles will be transformed, diminished or eliminated altogether.

# v Legal Considerations

## A. Statutory Framework

Under the distribution of powers in s. 91 and 92 of the *Constitution Act*, s. 92(13) in particular, the provinces have legislative authority to create, modify or abrogate causes of action in tort, legislative authority in relation to automobile insurance and the authority to enact a no-fault regime.

Case authorities have established that the administration of a no-fault motor vehicle accident plan by an administrative agency rather than the courts does not violate s. 96 of the *Constitution Act*. Workers' compensation boards and the Québec Régie are examples.

The authority of a province to modify tort rights and to enact no-fault auto insurance is clear, subject to compliance with the *Canadian Charter of Rights and Freedoms* (Charter).

## B. Challenges Under the Charter

Charter challenges to automobile insurance and compensation laws have been made to reforms that capped non-pecuniary damages and have argued primarily that revoking tort rights discriminates against accident victims with minor injuries in a manner that offends Charter s.15 (1) or s. 7, which also brings into focus Charter s. 1. For reference these sections are set out below.

### Section 1

s.1. The *Canadian Charter of Rights and Freedoms* guarantees the rights and freedoms set out in it subject only to such reasonable limits prescribed by law as can be demonstrably justified in a free and democratic society.

### Section 7

s.7. Everyone has the right to life, liberty and security of the person and the right not to be deprived thereof except in accordance with the principles of fundamental justice.

### Section 15(1)

s.15 (1) Every individual is equal before and under the law and has the right to equal protection and equal benefit of the law without discrimination and, in particular, without discrimination based on race, national or ethnic origin, colour, religion, sex, age or mental or physical disability.

Two appellate court decisions, both released in 2009, one in Alberta, June 12, 2009 in ***Morrow v. Zhang*, ABCA 281**, Leave to Appeal dismissed December 17, 2009, (*Morrow*) and another in Nova Scotia on December 15, 2009 in ***Hartling v. Nova Scotia* (Attorney General), 2009 NSCA 130**, Leave to Appeal dismissed May 27, 2010, (*Hartling*) offer the best insight into how a reform package should be designed and drawn to avoid conflict with the Charter.

In 2003, Alberta enacted a reform which capped "pain and suffering" damages ("PSD") of minor injury victims of auto accidents and brought in enhanced no-fault benefits with standardized medical protocols. A Charter challenge was brought. The trial judge upheld the challenge in *Morrow*, but the Alberta Court of Appeal (ACA) reversed that decision ruling that the legislation did not offend the Charter.

Two things about *Morrow* are of special note here:

a. the method of analysis used by the ACA because it will serve as the standard for the future; and
b. the ACA's ultimate conclusion that a minor injury claimant's interest in PSD is not an interest which is fundamental, either societally or constitutionally, because this will foreclose future challenges of similar reforms.

## C. Method Of Analysis

### *Morrow v. Zhang*

Based on ***Morrow***, the following steps would be followed in analyzing an automobile insurance reform:

a. consider the entire reform package and the interrelationships and interdependencies of its components: [in this case, the reform capped PSD for minor injuries at $4,000 but the package included enhanced no-fault medical benefits with standardized medical protocols to deliver prompt and effective treatment for minor injuries];
b. define the group whose Charter rights are said to be infringed: [in this case minor injury claimants whose PSD are capped];
c. determine if the reform impacts of one or more of the characteristics listed in s. 15 (1) of the Charter or analogous thereto: [in this case the reform did arguably impact the s. 15 (1) characteristic of "disability" which consists of (i) physical or mental impairment, (ii) a functional limitation and (iii) the imposition of a disadvantage or socially constructed handicap]; and
d. determine if the differential treatment of the group discriminates in a substantive sense as by perpetuating prejudice, stereotyping or historical disadvantage.

In determining whether the reform discriminated against minor injury claimants in a substantive way, the ACA considered several contextual factors:

a. whether minor injury claimants are subjected to stereotyping or prejudice: [in this case the ACA noted that the reform provided an individualized assessment and no-fault treatment benefit in accordance with standardized medical protocols for all injury claimants which were inconsistent with stereotyping or prejudice];
b. whether there is correspondence between the reform and the needs and circumstances of minor injury claimants: [in this case the individualized assessment and access to prompt no-fault medical benefits led to the conclusion that there was sufficient correspondence between the reform and the needs of minor injury claimants to uphold the reform];
c. whether the reform has other ameliorative purposes and effects: [in this case there were none]; and
d. what is the nature and scope of the interest affected by the reform: [in this case the right of minor injury claimants to seek recovery of more than $4,000 for their PSD was not of constitutional or societal significance, nor did it restrict access to a fundamental social institution or affect a basic aspect of full membership in Canadian society].

### *Hartling v. Nova Scotia* (Attorney General)

In 2003 Nova Scotia enacted a reform that capped PSD awards for minor injuries in order to achieve a reduction in mandatory auto insurance. The reform package there did not include the enhanced no-fault medical benefits with standard treatment protocols as it had in Alberta. A Charter challenge ensued. The trial judge decided that the reform did not offend the Charter and the Nova Scotia Court of Appeal (NSCA) agreed.

The challenge was brought on behalf of several differently placed individuals in order to enable the claimants to argue that the reform was discriminatory based on physical disability, mental disability and sex.

Because the trial judge dismissed the challenge, the expert evidence that he heard is noteworthy:

a. The NSCA noted evidence of Dr. J. David Cassidy, an expert Epidemiologist, specializing in Injury and Musculoskeletal Epidemiology, who testified:
   i. that the adversarial system may in fact hinder recovery;
   ii. his Saskatchewan study found the elimination of compensation for pain and suffering is associated with decreased incidents and an improved prognosis of whiplash injury;
   iii. they suspect the elimination of payments for pain and suffering might have affected the decision to claim for an injury in some cases;
   iv. as to improved prognosis, they believe the tort system is more adversarial and that legal conflict can delay recovery;
   v. **an adversarial system focussed the patient on pain and disability which is counter to the best methods of treatment which focusses patients on their abilities,** [emphasis added]; and
   vi. tort insurance is counter-productive to proper health care after injury.
b. Ms. Riis, a physiotherapist in practice for over 20 years testified that:
   i. she did not agree that there is a general disapproval attached to victims of soft tissue injuries and chronic pain;
   ii. since she began physiotherapy practice, she has seen growth in publicity around the prevalence of these conditions and a commensurate increase in the research effort and in the academic journal articles making the results of this research available to health professionals;
   iii. in her experience when patients become involved in legal proceedings arising from an injury, they may feel quite uncomfortable with the processes involved;
   iv. by their very nature, such suits can involve various medical examinations and questioning by representatives of all the parties involved in the case;
   v. these processes can be arduous, even exhausting and, as a treating practitioner, she has seen the emotional impact they can have on people; and
   vi. she also with some frequency encountered surprise and resistance from injury victims when their health care providers advise and advocate active approaches to treating conditions such as chronic pain, including an emphasis on movement, exercise and return to function in spite of ongoing pain.

The trial judge concluded:

> "Unfortunately, the nature of the tort recovery system which is adversarial requires patients to focus on their pain and disability which is counter to the best methods of treatment which focusses patients on their abilities. I conclude that the evidence advanced by the applicants falls markedly short of meeting the onus that persons suffering soft tissue injuries, even those that result in chronic pain, are stereotyped, stigmatized or disadvantaged by society."

The NSCA followed a method of analysis similar to that used by the ACA in *Morrow*. It began with a proposition that the reform treated minor injury claimants differently to their disadvantage

and that this justified an inquiry into whether the disadvantage arose from prejudice or stereotyping. The NSCA determined that the evidence fell short of establishing that the reform perpetuated prejudice or stereotyping sufficient to trigger section 15 (1).

In coming to its conclusion, the NSCA referenced four contextual factors:

a. as to the factor of pre-existing disadvantage, the NSCA rejected the claimants' arguments that the reform created a new disadvantage based on pre-existing stereotyping because the trial judge had found the evidence of stereotyping was extremely limited and primarily a product of the adversarial system;
b. as the correspondence between the claimants' circumstances and the reform, the NSCA, noting that the reform included a number of measures aimed at premium reductions which would benefit the entire driving public and concluded that the reform sufficiently accommodated the claimants' needs, capacities and circumstances by capping, not eliminating, PSD for minor claims, leaving intact all of the rights of recovery such as wage loss, out-of-pocket costs, and cost of future care;
c. the factor of ameliorative purposes or affects was not applicable; and
d. as to the nature of the interest affected, the NSCA concluded that the reform was sufficiently attentive to the needs, capacities and circumstances of the claimants.

The Nova Scotia reform was also challenged as discriminating against women on the premise that, as women have historically been disadvantaged in the workplace, the cap on minor injury PSD affects them disproportionately. The NSCA acknowledged this effect but concluded that it did not trigger s. 15 (1) based on analysis of two of the contextual factors:

a. regarding correspondence between the reform and the needs of women as a group, the root problem is gender discrimination in the workplace, not the reform; and
b. regarding the interest affected, PSD remains an economic interest where exact quantification is elusive, carrying engrained elements of arbitrariness and the reform leaves all pecuniary heads of damage untouched.

## *Hernandez v. Palmer*

***Hernandez v. Palmer*** 15 C.C.L.I. 2d 187 (Ont. Ct. J 1992), (Hernandez) was a 1992 decision of the Ontario Supreme Court noteworthy because the Ontario reform, unlike those considered in *Morrow* and *Hartling*, involved curtailment of the right to sue in tort for PSD in all but the most serious injury cases. In addition, substantially enhanced no-fault benefits were brought in.

The reform was upheld. The judge's reasons included:

a. the question of whether an individual's ability to sue in tort should be limited in the public interest is a matter that "lies in the realm of general public policy" and determination of the matter falls within the exclusive domain of Ontario's elected representatives;
b. a court should not frustrate a scheme considered and designed by a Legislature to rectify a serious problem. Where tradeoffs are involved, there must be a reallocation of resources, and would have to affect some rights;

c. the reform did not offend s. 7 of the Charter. Restricting the ability of some traffic injured to sue in tort for damages did not infringe the principles of fundamental justice;

d. auto accident victims are a diverse collection of individuals without any common characteristics or history, linked only by the chance occurrence of having been injured by a motor vehicle. Everyone is a potential member of this class;

e. automobile accident victims do not constitute a traditionally afflicted group of the type that s. 15(1) is meant to protect. Thus, automobile accident victims are not a 'discrete and insular minority' that has suffered political, social and legal disadvantage in Canadian society;

f. there was no differentiation using a trait listed in s. 15(1) since traffic injured had not been victims of prejudice or subject to any historical, sociological or political disadvantage. Nor did it impose disadvantages on traffic injured as a class;

g. the legislation does not deprive individuals of rights but exchanges their present right of action with a right to comprehensive no-fault benefits;

h. the establishment of a no-fault insurance scheme for persons injured in automobile accidents therefore does not create inequality within the meaning of the Charter s. 15(1);

i. each group above and below the threshold is entitled to receipt of all the benefits available so the legislation is not subject to being successfully challenged;

j. what remained is a differentiation premised upon the severity and nature of the injuries sustained, which was not related to the personal characteristics of the victim and therefore is not a mental or physical disability as enumerated in s. 15(1) or a ground analogous thereto.

## Report of Inquiry into Motor Vehicle Accident Compensation in Ontario 1988

The reform considered in Hernandez was preceded by an inquiry conducted by Mr. Justice Osborne of the Ontario Supreme Court. The constitutional aspects of his report which were based largely on a legal opinion secured from Professor Peter Hogg included:

a. a no-fault regime would provide less benefits than common law damages and would deprive some or all traffic injured of a tort action but such a reform would not in infringe either s. 7 or s. 15 of the Charter and would in any event be saved by s.1 of the Charter; and

b. justification of Worker's Compensation models which remove the right to sue in tort would apply equally to automobile insurance no-fault plans.

## D. Conclusions

1. Although no one can ever predict whether a legal challenge will be made following an auto insurance law reform, the prevailing judicial authority has clearly established that pure no-fault auto insurance regimes, like those that have been in force in Manitoba and Québec, are within the scope of provincial legislative authority and since they treat every member of the driving public equally, a challenge under the Charter would be without merit.

2. The decision of the Alberta Court of Appeal in *Morrow v Zhang* has satisfied the Committee that a Charter challenge to a future auto insurance reform would be untenable provided that, like the 2003 reform, it is developed and implemented as a package, balanced, interrelated and interdependent.

The foregoing discussion, analysis and conclusions are offered on the basis of a detailed review of the relevant judicial authorities. No members of the Committee are active members of the Law Society of Alberta, nor were any consulted in connection with this section. Readers are cautioned to consult their own legal advisors for professional legal advice, if required.

# VI Review of Health Outcomes Evidence

Historically, tort based motor accident insurance regimes have been driven, at least implicitly, by the conventional wisdom that "more is better" when it comes to medical and health treatment for soft tissue injuries as well as compensation for pain and suffering. This rationale has been based more on assumption than on scientific study or statistical analysis. In more recent times however there have been numerous studies informed by real data which have demonstrated the opposite conclusion: health outcomes for soft tissue and other traffic injuries are improved by minimal early care that promotes activation and are aggravated by the opportunity to pursue money compensation for pain and suffering in an adversarial tort process. Examples are discussed below.

## A. Literature Review of Health Outcomes after Legislation Removing Compensation for Pain and Suffering

In an article published in the New England Journal of Medicine in 2000 and co-authored by Dr. J. David Cassidy, (then with the Alberta Centre for Injury Control and Research, Department of Health Sciences, University of Alberta, Edmonton) the authors concluded that **the elimination of compensation for pain and suffering is associated with the decreased incidence and improved prognosis of whiplash injury**. This study also reported:

a. a 28% reduction of the incidents of whiplash claims and the median time to the closure of claims was reduced by more than 200 days;

b. whiplash injury is less of a problem in jurisdictions where
   i. there is a little expectation of symptoms, disability, or compensation and
   ii. the involvement of healthcare providers is minimal;

c. providing compensation for pain and suffering after a whiplash injury increases the frequency of claims for compensation and delays the closure of claims and recovery;

d. a strong and consistent association between the time to the closure of claims and indicators of recovery from injury;

e. fewer persons filed claims for whiplash injury under the no-fault system, and those who did recovered faster than similar claimants under the tort system;

f. under a tort system, claims are filed in a potentially adversarial environment that can promote the persistence of symptoms in claimants;

g. in the course of proving that their pain is real, claimants may encounter conflicting medical opinions, unsuccessful therapies, and legal advice to document their suffering of disability;

h. tort claimants are more likely than no-fault claimants to report that they had never experienced neck pain before the injury;

i. tort claimants reported slightly higher levels of pain and slightly higher percentages of the body that were affected by the pain;

j. under the no-fault system, there is no financial incentive to delay recovery since claimants have immediate access to medical care and other benefits without being required to substantiate their injuries;

k. claimants who did not initially seek care or who initially saw only a physician closed their claims faster than those who initially saw a physical therapist or chiropractor, practitioners who are more likely to intervene actively;

l. minimal intervention in the acute period aids recovery; and

m. under both the tort and the no-fault systems, the involvement of a lawyer was associated with delayed claims closure.

***Effect of Eliminating Compensation for Pain and Suffering on the Outcome of Insurance Claims for Whiplash Injury*** April 20, 2000 New England Journal of Medicine 2000, 342:1179–1186 J. David Cassidy DC PhD, Linda J. Carroll PhD, Pierre Côté DC, Mark Lemsta M.Sc, Anita Berglund B.Sc and Åke Nygren M.D., Ph.D

Similar results have been produced in Alberta in respect of recovery periods for mild traumatic brain injury.

***Prediction of Vocational Status 3 to 4 months After Treated Mild Traumatic Brain Injury*, Chris Paniak, PhD Journal of Musculoskeletal Pain, Vol 8 (1/2) 2000**

In 1995, a Québec Task Force developed the Québec Classification of Whiplash-Associated Disorders to assist health care workers in making therapeutic decisions. It was applied to a cohort of patients presenting for emergency medical care following their involvement in a rear-end motor vehicle collision.

A study evaluated the utility of the Québec Classification of Whiplash-Associated Disorders as an initial assessment tool, assess its ability to predict persistence of symptoms at 6, 12, 18, and 24 months post-collision. The results supported the use of the Québec Classification of Whiplash-Associated Disorders as a prognostic tool for emergency department settings.

***Prognostic Value of the Quebec Classification of Whiplash-Associated Disorders*** *Spine (Phila Pa 1976)*. 2001 Jan 1; 26(1):36-41. Hartling L, Brisson RJ, Ardern C, Pickett W.

A study was undertaken in the Australian state of Victoria to determine the relationship between compensable status in a no-fault compensation scheme and long-term outcomes after orthopaedic trauma involved patients aged from 18 to 64 admitted between September 2003 in August 2004 with orthopaedic injuries and funded by the no-fault compensation scheme for transport related injury and deemed non-compensable. The results showed that compensable patients were more likely than non-compensable patients to report moderate to severe disability at follow up for the physical and mental summary scores. Compensable patients were less likely than non-compensable to have returned to work or study. The authors said their finding of worse outcomes for compensable orthopaedic trauma patients, compared with non-compensable patients added to the evidence that compensation schemes may impede recovery from injury.

***The Relationship Between Compensable Status and Long-Term Patient Outcomes Following Orthopaedic Trauma*:** Belinda J Gabbe, Peter A Cameron, Owen D Williamson, Elton R Edwards, Stephen E Graves and Martin D Richardson Med J Aust 2007; 187 (1): 14-17.

A study was undertaken to determine whether patterns of early clinical care involving visits to general practitioners, chiropractors, or specialists were associated with different rates of recovery. The conclusions were that the type and intensity of clinical care initiated within the first month after the injury is associated with the rate of recovery from whiplash injuries and did not support the hypothesis that early aggressive care promotes faster recovery.

***Initial Patterns Of Clinical Care and Recovery From Whiplash Injuries: A Population-Based Cohort Study*** Arch Intern Med. 2005 Oct 24;165(19):2257-63. Côté P, Hogg-Johnson S, Cassidy JD, Carroll L, Frank JW, Bombardier C.

The *Marshall Report* quoted from the above study as follows (p 33):

"We found that increasing the intensity of care beyond two visits to (family doctors), beyond six visits to chiropractors, or adding chiropractic to medical care was associated with slower recovery from whiplash injuries even after controlling for initial injury severity. Clinicians who promote frequent visits may inadvertently encourage patients to cope passively with their pain...patients who cope passively with their pain may demand more clinical care. Relying on repetitive clinical care likely reinforces some patients' belief that whiplash is a serious disorder with a long, disabling course. As with low-back pain aggressively treating patients with acute whiplash injuries likely promotes illness behaviours and disability rather than return to normal activities."

A follow-up study was undertaken by the same authors to test the reproducibility of the finding that the intensity of health care utilization during the first month after the injury for whiplash injuries is associated with delayed recovery under a tort system of insurance. The authors found that increasing the intensity of care to >2 visits to a general practitioner, 6 visits to a chiropractor, or adding chiropractic care to general practitioner care was associated with slower recovery which was consistent with the findings of their previous study. Under no-fault insurance, patients who consulted a general practitioner and a specialist had a slower recovery than those who consulted a general practitioner once or twice.

The authors concluded that too much health care too early after a soft tissue injury negatively influences the prognosis of whiplash patients. The combination of chiropractic and general practitioner care significantly reduces the rate of recovery and appears to confer no benefit to patients. In short, early minimal care that promotes activation improves prognosis.

The authors noted that because patient pressure is a known predictor of physician behavior, doctors may use treatments, schedule follow-up visits, and refer patients when not medically needed, which in in turn may lead to adverse outcomes and even prolong recovery by legitimizing patients' fears and creating unnecessary anxiety.

The authors suspected that a tort system may influence patients' perception of their medical needs and how insurers/tort require them to legitimize their injury and then influence the patients to pressure clinicians for referrals.

***Early Aggressive Care and Delayed Recovery from Whiplash: Isolated Finding or Reproducible Result?*** Rheum. 2007 Jun 15;57(5):861-8. Côté P1, Hogg-Johnson S, Cassidy JD, Carroll L, Frank JW, Bombardier C.

The *Marshall Report* commented on the above study as follows (p 32):

"The majority of injury claimants report that they have "minimal" or "minor" injuries at time of the accident. While symptoms may manifest themselves long after an accident, the fact is that most people are not seriously injured. Some 83 per cent of motor vehicle injuries involve whiplash or other soft tissue injuries such as a sprained back, which, most of the time, can be treated by relatively simple, short-term and inexpensive procedures that are well understood by health care providers."

A study conducted in the Australian state of New South Wales concluded that legislative change which both removed financial compensation of pain and suffering for whiplash and introduced clinical practice guidelines for its treatment had a beneficial effect on disability pain and recovery. The study noted that whiplash was the most prevalent injury in a compulsory, fault-based, third-party motor vehicle insurance scheme in New South Wales, Australia. It examined an auto insurance reform in 1999 that contained four key legislative changes:

a. removal of payment for compensation for pain and suffering for whiplash injured;
b. introduction of clinical practice guidelines for treatment of whiplash;
c. regulation to ensure earlier acceptance of compensation claims; and
d. earlier access to treatment for all types of injury.

The study produced evidence that showed health outcomes for people with whiplash were substantially improved after legislative change that restricted access to compensation for non-economic loss, introduced clinical guidelines for the management of whiplash, and provided earlier acceptance of compensation claims and greater provision of early treatment. The superior outcomes were sustained in a second group sustaining their injuries after the legislative change. Improvement was demonstrated in both the degree of disability, physical functioning in pain together with percentage of people recovered. The findings produced evidence that the structures of compensation schemes can positively influence health outcomes for injured people. The data also suggest that psychosocial factors contribute to the development of the disability after a whiplash injury.

The study showed a significant improvement in health status as assessed in relation to disability, pain and physical functioning after legislative change that reduced compensation for disability for whiplash injury and encouraged earlier acceptance of insurance claims and early treatment. The improvements in health outcomes were maintained for more than four years after the legislative change. The authors concluded that as the health status of people with whiplash improved after legislative change, design of compensation schemes should be undertaken with the understanding that the scheme structure may have substantial effects on the long-term health of injured people.

***Legislative Change is Associated with Improved Health Status in People with Whiplash***-SPINE Volume 33, Number 3, pp 250-254 @2008, Lippincott Williams and Wilkins, Ian D. Cameron, PhD, Trudy Rebbeck, PhD, Doungkamol Sindhusake, PhD, George Rubin, PhD, Anne-Marie Feyer, PhD, John Walsh BSc and William Scofield MA.

A study of the effects of a population-based media campaign providing positive messages about back pain in the Australian state of Victoria produced findings to suggest that strategy can be highly effective in reducing back related disability.

***2001 Volvo Award Winner in Clinical Studies: Effects of a Media Campaign on Back Pain Beliefs and its Potential Influence on Management of Low Back Pain in General Practice***
Rachel Buchbinder, MBBS (Hons) MSc. FRACP Spine Volume 26 number 23, pages 23535–25 (2001)

## B. Expert Testimony in Recent Cases

Expert testimony in recent Canadian trials in Alberta and Nova Scotia pertaining to the constitutional validity of new legislation which capped awards for traffic injured with certain defined soft tissue injuries is consistent with studies referred to above.

### *Morrow v. Zhang*, 2008 ABQB 98

Dr. Larry Ohlhauser (Ohlhauser) gave testimony about his engagement by the Alberta government to provide advice regarding the 2003 Alberta tort reforms. His testimony is summarized as follows:

a. Prior to 2003 there were no regulated standards of care applicable to the diagnosis and treatment of whiplash associated disorders, sprain or strains.

b. There were no well recognized tools to help the patient quantify pain. In about 2003 in the medical community the reporting of pain was essentially using subjective tools. Quantifying pain medically in his view required the subjective opinion of the patient and the practitioner.

c. There was nothing in the medical literature to define a "minor" injury.

d. He was retained to develop a process to help Alberta traffic injured to recover more quickly and effectively, provide advice as to the definition of "minor injury" and to develop protocols and guidelines for diagnosis and treatment to improve their prognosis.

e. When asked in September 2003 to find certain medical terms to develop regulations dealing with motor accident soft tissue injuries, Ohlhauser reported that the assessment, diagnosis and treatment of some minor injuries have been inconsistent and there was no effective patient focussed process for reassessing injuries for those who did not recover in the expected timeframe.

f. He considered the majority of injuries such a sprains and strains properly diagnosed and treated should heal within three months. He suggested a guideline to help improve recovery. His priority was to build a model that would be acceptable to patients.

g. He said the priority of healthcare providers should be to focus on assisting quick and effective recovery and any dispute resolution process dealing with entitlement to damages be set out in a separate regulation to involve practitioners other than those providing the care to the injured person.

h. He conducted a literature review, engaged professionals and representatives of healthcare groups, proposed a model for consideration and enlisted a core working group to provide input as to the diagnosis and treatment of all soft tissue injuries. He interviewed clinicians experienced in treating soft tissue injuries and interviewed others. There was a wide variation in recovery times for whiplash associated disorder (WAD) injuries in different circumstances and countries.

i. He determined that an evidence-based approach to diagnosing and treating whiplash injuries was consistently advocated.

j. It was important to identify those less likely to recover quickly and uneventfully by referring to certain alerting factors. Once identified, those persons would more likely require multidisciplinary assessment and treatment by an inter-disciplinary rehabilitation team.

k. The object was to reduce the numbers of persons complaining of chronic whiplash symptoms. Improved recovery time could occur if care was managed properly which included making an accurate diagnosis, an appropriate injury treatment plan and identifying early the poor prognostic factors.

l. He believed if the model was developed properly, more people would receive appropriate treatment and cost savings might result in future. He took into consideration that a time frame for recovery as part of the definition could ignore the physiological response expected from injured tissue and also secondary gain could be sought by continuing treatment for monetary gain or for attention.

m. He familiarized himself with identifying flags or alerting factors for some who may not progress to full recovery but instead lead to chronicity. He advised that biopsychosocial models identify that medical problems exist and address assistance to re-integrate into the community.

n. He met with Dr. Ferrari and reviewed other compilations including the *Québec Task Force report* which had a useful classification system for grading whiplash associated disorders and enhancing communication between practitioners and insurers regarding the patient condition.

o. The core working group originally included members of the Colleges of Physicians and Surgeons, Physical Therapists, and Chiropractors of Alberta, the Alberta Association of Occupational Therapists, Alberta Medical Association, Massage Therapists and Psychologists Associations. Their object was to understand the context of developing the "minor injury" definition, agree to a process to develop diagnostic criteria and treatment protocols, finalize the definition of minor injury and improve the section B no-fault benefit processes.

p. The model he designed recognized some items which are impairment but may not result in disability. He agreed some persons with chronic pain syndrome could also have a disability. He expected that most patients under his model would be pain free within three months although some would still report pain.

q. On March 3, 2004 he met with the core working group which agreed in principle with many of the presented concepts including diagnosing injuries and categories of WAD injuries.

r. Since he knew some practitioners may not have the interest or skills to effectively manage the injured person, he introduced the concept of an injury management consultant to provide early consultation where diagnosis was in question or the person not progressing as expected. He concluded if those persons could be early identified, they could be moved out of the protocols into a multidisciplinary assessment process using the biopsychosocial model to address factors that would otherwise be a barrier for efficient and effective recovery.

s. He and the experts agreed to reduce the likelihood of developing chronic conditions and ongoing impairment the primary healthcare practitioner in the case of a WAD I or II injury with alerting factors to recommend reassessment within 21 days of the accident and if the injury was not appropriately resolving, to refer the person to an injury management consultant for an assessment and report.

t. In April 2004 he provided a draft of the *Minor Injury Regulation* and *Diagnostic And Treatment Protocols Regulation* (DTPR) for comment. He advised of the steps to be

taken if the patient has not fully recovered by 12 weeks. The injury management consultant could provide early consultation before that and after assessment recommend multidisciplinary assessment or interdisciplinary rehabilitation.

u. The target outcome for sprain, strain and WAD I and II injuries was expected to be 90% by 12 weeks, if properly managed according to the DTPR. Potential barriers would include the patient not participating in the recovery, the practitioner not following protocols, or lack of further support by insurers in a timely manner for the multidisciplinary assessments in rehabilitation when requested by the practitioner.

v. After the regulations were passed on June 21, 2004, Ohlhauser worked to address implementation issues as to the time to educate practitioners, develop and distribute interpretive materials and prescribe forms and develop qualification standards for injury management consultants and certified examiners in clarifying final procedures.

w. He completed preparation of an interpretive bulletin in September 2004 outlining new protocols for diagnosis and treatment of auto accident minor injuries which went into effect on October 1, 2004.

x. He developed standardized forms to provide a record of the client, assist with administrative process, record information that may be required for legal processes and ensure proper disclosure and consent by the clients, practitioners and other parties. The forms were also intended to gather information for ongoing review and evaluation of the DTPR.

y. He assisted to develop standards to identify appropriately qualified individuals to be certified examiners and injury management consultants. He developed processes and guidelines, training materials and related resources for all service providers which were distributed to print or electronically.

z. He intended the DTRP to be evaluated on an ongoing basis to assess the effect of the reforms on the recovery of injured persons. Outcomes were expected to improve recovery, reduce cost to the insurance system for these injuries and reduce the frustration of participants with the rehabilitation process.

aa. After October 1, 2004 fees were established and published in the Alberta Gazette. Educational seminars were given to primary healthcare practitioners and injury management consultants.

ab. The objective of the DTPR was to attain recovery to patients and restore them to the same level of functionality as pre-accident. He considered being able to advise patients to expect recovery within 12 weeks would be an advance compared to pre-reform and would enable them to seek recovery without involvement. Except for massage therapists the core working group was unanimous.

ac. He made a plea for the regulations to differentiate treatment from disputes over the nature of the injury because the health community did not want to become legal experts when treating patients.

Dr. Richard Mayou had undertaken research since 1990 to examine psychological and behavioural complications of road accidents at the Oxford Accident and Emergency Department in the United Kingdom. His follow up study of traffic injured including whiplash injury revealed their considerable dissatisfaction with the procedures for seeking compensation. His evidence about this included the following:

a. Subjects were more often concerned with recognition of the distress and suffering than with the size of their financial settlement.

Many said money was not the most important issue but rather they wished those responsible showed awareness of their suffering.

b. Reasons for dissatisfaction with the compensation system were mainly to do with the amount or need for personal contact, flow of information and a satisfactory conclusion. The principal specific complaints were lack of information and a feeling that little more could be done without continual pressure and delays caused by apparent inefficiency.

c. The Oxford studies were the largest bodies of evidence using comprehensive quantitative measures of quality of life outcomes. …. Continuing care for those with persistent problems is often disorganized with poor communication between patients and health professionals. Innocent victims want recognition of their suffering, effective care, better information and more sympathetic and straightforward compensation procedures.

d. Evidence supported early immobilization, early return to normal activity, early exercise and multi model treatment for acute whiplash. Data also showed multidisciplinary biopsychosocial rehabilitation with a functional restoration approach improves pain and function. Well-designed early interventions to provide information and psychologically and behaviourally informed advice can be valuable in improving satisfaction and outcomes. Routine clinical care of WAD disorders is generally in line with the recommendations of the Québec Task Force.

e. Canadian researchers have played a leading role. In particular, Cassidy showed the benefits of introducing no-fault in Saskatchewan and that the type and intensity of clinical care initiated in the first month after the injury is associated with the rate of recovery from whiplash injuries.

f. He concluded that the traditional compensation procedures are prolonged, highly frustrating for victims and do not promote good early treatment but often delay specialist care of complications. Those seeking compensation want early recompense for their financial losses and sympathetic recognition of the reality of their distress and problems. He said those he has interviewed would be greatly reassured by recognition of their needs and the promise of the good care of the types set out in the DTPR.

g. In a 1997 paper reporting on interviewees who sought compensation, he found the victims reported long delays, lack of explanation, a feeling that the system did not believe in what they were saying or understand their situation. Whiplash victims felt frustrated and that financial losses and recompense was given begrudgingly and very late. Even if recognized, the treatment has been delayed.

h. He said injured people usually believe there are things they can do for themselves or with their family. They want to know what those things are and prefer to have some control over their futures.

i. His publications reported that innocent victims considered the compensation system did not seem sympathetic. They found it unpleasant to go through a court experience. Their encounters with the legal system did not give them the apologies, concern or sympathy they felt entitled to.

j. He noted their frustration related to the slow and arduous process, conducted in a way that conveyed no sympathy, even if liability was admitted. They were frustrated with the long time it took to settle and settlement

was generally seen as a relief. They did not worry about the amount of the settlement but simply wanted to shorten the length of the process.

k. Most said in the end it was not the money that was important because it did not get them back to their pre-accident state. Money was not totally what they were concerned about. What concerned interviewees were pecuniary losses which caused the difficulties and delays in obtaining recompense for them.

l. His research showed that traffic injured want to get back to normal and are upset by obstructions and delays. It is the injury and disability that caused the distress often exacerbated by legal procedures. He saw the separation of high quality medical care from insurance procedures as a major advantage.

m. He considered it an advantage that insurance and compensation had been separated from the medical care in the Alberta reforms…. Although some will not have substantial financial recognition, it is more important that people are treated with concern and sympathy in a positive way.

n. He said various aspects of compensation proceedings leave people with psychological stress, but he thought if the cap was present as part of an entire package with treatment and advantages it would not cause stress.

o. He did not agree the cap eliminated uncertainties and frustrations or the stress involved with dealing with lawyers and advancing a claim for compensation. He said traditional compensation procedures are prolonged and highly frustrating for victims.

p. The benefits of diagnostic and treatment protocols were substantial. Protocols remove barriers to care, strongly promote early evidence-based care for all, reduce delay and meet the need for better treatment for the large number of traffic injured in a way that is feasible and efficient. The proposed number of treatments is in line with literature on optimal care.

q. He considered the protocols meet the wishes and needs of patients for more organized acute care information and early recognition of problems. He expected the improvements in content and delivery of routine early care would have marked benefits in reducing the incidence of chronic complications.

r. The provision of significant treatment and continuing review for all cannot be demeaning.

s. He did not agree that the protocols suggested a standard approach for all but saw the reform legislation as accepting the genuineness and treatment needs of those accident victims and providing ways for ensuring appropriate treatment.

Dr. Robert Ferrari (Ferrari) was presented as an expert in musculoskeletal medicine, soft tissue injuries, related medical conditions, related associated disorders, clinical management, diagnosis, treatment and management of injuries and conditions. In the following evidence:

a. Regarding the Alberta reforms he did NOT agree that:

   i. reforms would increase stress and unwanted negative reaction of many patients, the reforms stated injuries were unreal or less deserving of treatment;

   ii. the protocols do not require objective proof of injury or impairment in the sense of certainty;

   iii. a number of persons injured with sprain, strain or WAD are as seriously affected as other injured types;

   iv. minor injury claimants are subject to limitations and compensation under the legislation. If they were as dramatically

affected as conjectured, they would be assessed as having a serious impairment and would not be subject to the compensation limits;

v. the protocols treat all persons the same;

vi. the protocols fail to recognize the different rehabilitation, biomechanical, vocational, occupational and comprehensive needs of patients suffering from such injuries or recognize the complex nature of many of such injuries; or

vii. the protocols impaired a physician's ability to act in accordance with good and ethical medical standards and thus affect the accuracy of the diagnosis or there were time restrictions on undertaking treatment.

b. In his opinion:

i. the protocols provide general guidelines, allow a wide array of treatment approaches and add adjunctive therapies which could be individually tailored to the injured person's needs;

ii. the protocols pre-authorized a wide array of treatment and then provided access to Section B expenses up to $50,000 and encourage evidence-based assessment;

iii. the psychosocial measures such as education, reassurance and discussing the social effects of re-establishing normal activities and self-care and the disadvantage of extended dependence on healthcare providers are emphasized throughout the protocols;

iv. the protocols place no restriction on what primary healthcare practitioners may prescribe for the individual injured person;

v. it was an unfounded fear that some insurance systems may lead to premature termination of treatment or other benefits for a significant number of patients who experience chronic pain;

vi. the reforms made the definition of pain impairment and disability straightforward. A health professional need not measure impairment or pain but only conclude that the person injured states that the pain is at a severity that it interferes with their function;

vii. the protocols provided all practitioners with evidence-based guidelines and a new injury management consultant process which are both important and prevent delays in therapy;

viii. he was always able to make a diagnosis of a WAD I or II on the first visit;

ix. requiring immediate categorization of the patient would not have a significant impact unless it was the difference between a WAD II or III; and

x. the categorization could affect the patient's decisions which could have medical and legal consequences.

When asked by patients of the advantages of being treated under the protocols Ferrari advised they would get information about treatment without delay. His main concern was to talk to patients about treatment. He said for legal implications remaining in or opting out of protocols, he advised them to consider legal advice.

Ferrari had published views that outcomes for chronic whiplash patients may be adversely affected by getting involved in the legal process. He noted studies showed the more patients talk about their symptoms the more severe the symptoms become.

Ferrari advised patients to not maintain a pain journal because studies showed the more patients rate their own pain, the more severely it is rated. Also he said paying too close attention to symptoms and worrying over them made them more severe.

From a medical perspective Ferrari did not have a concern about the use of the term “minor injury” but agreed that layperson could object to the view that their own injury was “non-minor”. He agreed a soft tissue injury would be a more appropriate term.

Ferrari’s published article stated that he does not consider that whiplash suffers are driven by a desire for compensation but likely the entire litigation process often drawn out for years may be an adverse factor and removing an interest or a convenience for pursuing of litigation process may actually reduce [numbers of ] chronic care patients.

In Ferrari’s view the *Minor Injury Regulation* was mainly designed to save money for all society including insurers, insurance providers, and those who pay for insurance.

Traffic injured may choose to enter litigation or not. If they do, he thought they should be aware of the potentially adverse effects psychologically of the process and those effects should be discussed and addressed through the course of the litigation.

In Ferrari’s view:

a. the DTPR was intended to improve the health of Albertans;
b. a change in the compensation system that makes compensation an automatically brief process would be helpful;
c. traffic injured are often attended by lawyers, therapists, the media, and others who encourage illness behaviour that is at best maladaptive and at worst grief driven; and
d. studies showed that being in litigation can affect a person’s health.

Barbara Sulzenko-Laurie (Laurie) was qualified as an expert in developing and working with surveys and studies to measure and evaluate policy initiatives and proposals with particular reference to health care service.

Laurie said IBC has undertaken significant initiatives in researching best practices and identifying and treating traumatic injuries.

She led a task force in 2003 for IBC that developed an evidence-based program of care for the treatment of whiplash, WAD I and II injuries. She worked with the medical rehabilitation community in implementing an evident-based program of care called pre-Preapproved Frameworks which are part of the Ontario regulations.

The project was undertaken to monitor the insurance system and to provide continuous quality improvement to monitor and identify problems and benchmark how it operated for soft tissue injuries, sprains and strains prior to and subsequent to the reform and to determine if objectives have been met, to determine what issues have emerged and unanticipated issues emerging from the reform. They looked mainly at administrative outcomes.

The purpose of the study was to establish a benchmark to allow evaluation of the implementation of protocols and to produce a baseline picture from 52 weeks of experience with 600 claims. The distribution of diagnoses showed that about 37% of injuries were WAD I. Significantly less than 50% were WAD II. The remainder were either sprain or strain injuries. Many claimants were not getting treatment in the first 12 weeks. In 12 weeks fewer than 10% of claims were closed and by 26 weeks almost 1/3 of claims were closed. This indicated it would be a challenge to obtain full recovery of 90% of soft tissue injuries within 90 days.

After the reforms, there was a significant decline in the diagnosis of WAD 1 and other sprains and strains. There was a significant increase in WAD II claims. There were some economic incentives to diagnose WAD IIs. The numbers getting treatment in the benchmark increased from 76% to 91%.

While there was no difference in the rates of claims closures for the first 12 weeks, the costs of treatment were increasing. Although the numbers of treatment were not increasing, price per treatment was increasing. Claims closures in 26 weeks were substantially increased. 30% of claims were closed in six weeks and 60% of claims were closed in the second post reform study. The rate of disability claims fell from 17 to 11%.

The evidence of disputing cases declined from 20% to 7% in the second post reform study.

Dr. Kim Burton (Burton), a PhD in clinical epidemiology and bio mechanics, was qualified as an expert to opine on evidence-based practice relating to whiplash associated disorders, sprains, strains and other back problems including the cause, nature and management of such injuries and conditions and comparisons to other jurisdiction guidelines and protocols.

Burton was retained by the GOA to review the *Minor Injury Regulation* (MIR) and the DTPR and to comment on the definitions of minor injuries, serious impairment, strains, sprains and WAD injuries and the appropriateness of the protocols. He was asked to compare the MIR and the DTPR with guidelines and protocols pertaining to whiplash associated disorders in other countries and with scientific evidence in general. His evidence included:

a. Most strains sprains and whiplash associative disorders are common health problems characterized by high prevalence rates in the population, symptoms without permanent impairment, high probability of rapid recovery and return to work, although long-term incapacity is the exception rather than the rule.
b. Predictors were unreliable as to which persons would proceed to long-term incapacity. Multi model intervention help to solve this concern which requires that all involved in the recovery including patients, health professionals, employers and insurers have the same common goals to act in a consistent and coordinated way to achieve resolution of the condition and return to normal participation.
c. Unless managed well, whiplash injuries can be problematic for patients and society. More WAD patients will recover within three months if improved treatment approaches can be implemented. Even if symptoms persist, they are not necessarily constant but rather come and go with fluctuating intensity and do not always require further care.
d. It can be uncertain whether those symptoms are directly related to a motor vehicle accident or simply a reflection of the high prevalence of musculoskeletal disorders among the general population. For example, 25% of persons experience neck pain for at least one day over the course of a week and over 2/3 find it difficult to carry out normal activities.
e. Some experience persisting symptoms that can be related to the injury but in most cases, there is no indication they have experienced a more severe injury, rather they have faced obstacles to recovery and have drifted into a chronic pain experience. The range covers the possibility of inadequate treatment or

individual psychological reactions to injury and pain. It is well accepted that the most effective management is early return to normal activities.

f. Failure to recover may be due to psychosocial obstacles not adequately addressed and may signify a transition to a chronic pain syndrome. WAD I and II are minor injuries and strains, sprains and WAD are common health problems and for most people represent nothing more than a transient experience that settles uneventfully with a combination of healthcare and self-management. A high proportion of such patients could recover within 90 days through the Alberta model but a final answer would only come from randomized controlled trials.

g. His research was funded by the Association of British Insurers. He said 25% of patients were still symptomatic two years post injury which meant they would still experience some symptoms. He did not advise patients that entering a claim would adversely affect their health and lead to chronic pain because that was not a clinical issue.

h. He said there was research indicating that persons engaged in litigation have a poorer outcome that people who do not.

### *Hartling et al. v. Nova Scotia* (Attorney General) et al. (2009), 278 N.S.R. (2d) 112; 70 CCLI(4th) 25; 2009 NSSC2

In ***Hartling et al. v. Nova Scotia*** **(Attorney General) et al. (2009), 278 N.S.R. (2d) 112** (*Hartling*), certain expert medical evidence was adduced and commented upon by the trial judge. The Nova Scotia Court of Appeal noted:

a. the evidence of Dr. J. David Cassidy who suggested that the adversarial system may in fact hinder recovery:

> "¶ 62 Dr. Cassidy has extensive experience and qualifications. All parties agreed that Dr. Cassidy was qualified as an expert Epidemiologist, specializing in Injury and Musculoskeletal Epidemiology."
>
> "¶ 76 Dr. Cassidy was asked to explain why the elimination of compensation for pain and suffering is associated with a decreased incidents and an improved prognosis of whiplash injury and said that they observed these findings in Saskatchewan but cannot state with certainty why this happened. He said that they suspect the elimination of payments for pain and suffering might have affected the decision to claim for an injury in some cases. With respect to improved prognosis, he commented that they believe the tort system is more adversarial and that legal conflict can delay recovery. **An adversarial system focussed the patient on pain and disability which is counter to the best methods of treatment which focusses patients on their abilities** [emphasis added]. He stated 'in essence, tort insurance is counter-productive to proper health care after injury'."

b. evidence of Viivi Riis, a physiotherapist, as follows:

'... I do not agree that there is a general disapproval attached to victims of soft tissue injuries and chronic pain. Indeed, since I began practising as a physiotherapist more than twenty years ago, I have seen significant growth in the amount of publicity around the prevalence of these conditions. There has been a commensurate increase in the research effort in this area and in the academic journal articles making the results of this research available to health professionals.

It is my experience that when patients become involved in legal proceedings arising from an injury, they may feel quite uncomfortable with the processes involved. By their very nature, such suits can involve various medical examinations and questioning by representatives of all the parties involved in the case. These processes can be arduous, even exhausting and, as a treating practitioner, I have seen the emotional impact they can have on people. I have also with some frequency encountered surprise and resistance from injury victims when their health care providers advise and advocate active approaches to treating conditions such as chronic pain. These approaches include an emphasis on movement, exercise and return to function in spite of ongoing pain.'

c. The judge's comment:

*Unfortunately, the nature of the tort recovery system which is adversarial requires patients to focus on their pain and disability which is counter to the best methods of treatment which focusses patients on their abilities.*

## C. Other Studies

Other studies have pointed to long recovery times and over-treatment of injured persons.

The *Pinnacle Study in Ontario* showed increases in claims for soft tissue injuries associated with increases in legal representation.

Comparisons with the statistics between this study and those from the time of the *Osborne Report* showed the following:

a. 91% of the claimants had some type of legal representation. At the time of the *Osborne report*, 54% of claimants had legal representation.
b. The majority of claimants ultimately commenced legal action against the insurer (83%). This is an increase of 60% since the *Osborne report*. The ultimate severity for claims in which legal action commenced was 14% higher than average.
c. The percentage of claimants with psychological trauma increased from 1.1% in the *Osborne report* to 36.2% in the current study. The percentage of claimants with mild neck injuries and mild back injuries increased from 3.4% to 27.2% and 1.5% to 25.3%, respectively. The percentage of claimants with shoulder soft tissue injuries also increased by 15.3%, from 14.9% to 30.2%.
d. The percentage of claimants with soft tissue neck injuries decreased from the *Osborne report* to the current study, going from 58.7% to 36.1%.
e. The actual time lost from work increased from the *Osborne report* where the median time lost from work was two months to the current claim study where the median time lost is seven months. In the *Osborne report*, 77% of the claims were settled before an action commenced. In the current claim study, 16% of the claims were settled before an action commenced.

***Automobile Insurance Third Party Liability Bodily Injury Closed Claim Study in Ontario***
Pinnacle Actuarial Resources, Inc (Pinnacle Study), August 13, 2014, p. 4 www.fsco.gov.on.ca/en/auto/Documents/abbreviated-report.pdf

The conclusions drawn in the *Marshall Report* on these findings were instructive:

a. *Marshall* observed that by comparison of the Pinnacle Study findings with that the Association of Worker's Compensation Benefit Systems in Canada the average duration of injury claims for 2015 (the length of time taken to get a worker back to health and to close the file) is just 76 days, about two and a half months, whereas it is one year to two years or more to resolve minor injury claims in the auto insurance system.
b. Moreover, the provincial worker's compensation systems in Canada find that the proportion of claims awarded permanent impairment benefits across Canada is about 13.5 per cent or almost half that found in the auto insurance system in Ontario.
c. *Marshall* concluded that soft tissue injuries should not normally develop into permanent impairments if they are treated properly to begin with. The rate of impairment in the threshold no-fault Ontario model is a warning sign that medical care is not being properly handled. Appropriate medical treatment has been shown to reduce or prevent the development of permanent impairments from soft tissue injuries by as much as 80 per cent.

A collaborative study conducted by a comprehensive group of health professionals in

its 2015 report proposed a new classification of traffic injuries, including Type I, Type II and Type III with these explanations:

a. The natural history of the initial injury is the basis for classification. A Type I injury is likely to recover within days to a few months of the collision; but during the period of recovery the patient may benefit from education, advice, reassurance and time-limited evidence-based clinical care. Type I injuries are the focus of this report. A Type II injury is not likely to undergo spontaneous recovery, and the injured person may require medical, surgical and/or psychiatric/psychological care. Type III injuries are a subset of Type II injuries, that involve permanent catastrophic impairment or disability. The care for Type II and Type III injuries is not covered in this report.

b. Persons with Type I injuries should be educated and reassured from the outset that their own inherent healing capacities are likely to lead to a substantial recovery. They should also be informed that only a discrete set of treatments show evidence of any benefit; and that the same evidence shows that benefit is largely on the basis of pain alleviation. Healthcare professionals need to listen to the patient's concerns and emphasize measures to assist them to cope, recognize and avoid complications.

c. Interventions for Type I injuries should only be provided in accordance with published evidence for effectiveness, including parameters of dosage, duration, and frequency; and within the most appropriate phase. The emphasis during the early phase (0-3 months) should be on education, advice, reassurance, activity and encouragement. Health care professionals should be reassured and encouraged to consider watchful waiting and clinical monitoring as evidence-based therapeutic options during the acute phase. For injured persons requiring therapy, time-limited and evidence-based intervention(s) should be implemented on a shared decision-making basis, an approach that equally applies to patients in the persistent phase (4-6 months).

d. Type II injuries typically involve a substantial loss of anatomical alignment, structural integrity, psychological, cognitive, and/or physiological functioning. The majority of patients with such injuries will require (in addition to natural healing) a significant amount of medical, surgical, rehabilitation, and/or psychiatric/psychological intervention to ensure an optimal recovery. There is an evidentiary basis for major concern about both the extent of recovery and about the likelihood of complications developing and/or persisting in the absence of such expert care; significant impairment and disability are primary concerns. Examples of traffic collision-induced Type II injuries include fractures of the femur and hip, shoulder dislocation/fracture, facial fractures, depression or post-traumatic stress disorder.

e. Type III injuries refer to the subset of Type II injuries which fall within the conceptual framework of catastrophic impairment within the Ontario Statutory Accident Benefits Schedule (SABS). In Ontario, there is a special set of entitlements available to patients whose injuries are extremely serious and permanent such as amputation, spinal cord injuries and severe brain injuries. Extended benefits are available for long-term attendant care, and medical and rehabilitative goods and services.

***Enabling Recovery from Common Traffic Injuries: A focus on the Injured Person.*** Côté P, Shearer H, Ameis A, Carroll L, Mior M, Nordin M and the OPTIMa Collaboration. UOIT-CMCC Centre for the Study of Disability Prevention and Rehabilitation. January 31, 2015.

## D. New South Wales Introduction of No-Fault Long-Term Care for Catastrophically Injured – 2006-2007

In 2005 the New South Wales government (NSW) determined that the 1999 auto insurance reform had led to a stable and affordable scheme which made it possible to expand coverage to all catastrophically injured persons whether they could prove fault or not.

NSW identified that about 125 people in New South Wales were catastrophically injured annually who had significant daily needs including care, personal assistance, domestic support and ongoing equipment and medical needs. It proposed a scheme that would provide:

a. medical treatment;
b. acute inpatient care;
c. rehabilitation;
d. specialist and expert medical care; and
e. pharmaceutical expenses for life.

The model contemplates appointment of lifetime care coordinator to work with the person and the person's family. The coordinator would focus on helping the person adjust to the disability and help them regain as much daily function and independence as possible. It would also identify options for accommodation, transport, education, employment, social and recreational activity. In the acute care and rehabilitation phase, the coordinator would work with the injured person to help develop rehabilitation and community participation plans that identify short and long-term goals consistent with desire.

The coordinator would also help the injured person and their family develop a community participation plan to enable the person to access all available activities and opportunities. The long-term planning process would include:

a. Specific goals of the injured person including educational social and employment;
b. services and support required including identifying any specific skills;
c. time frames;
d. specific service entry, exit and transitional strategies;
e. roles and responsibilities of those involved and support;
f. agreed review date to assess the adequacy of the plan; and
g. support for carers.

Following the rehabilitation towards discharge, the life care coordinator would help the person and family focus on living with their disability and identify their ongoing support needs. Following discharge the scheme would typically provide daily services such as:

a. aids and appliances;
b. home and transport;
c. personal care;
d. domestic services;
e. childcare services;
f. nursing care;
g. assistance with community access;
h. educational and vocational services; and
i. respite care.

The program would provide lifetime care and support through a fully funded statutory trust. The government would also provide support for the scheme including medical costs.

An actuarial analysis estimated approximately 124 persons would be eligible to enter the scheme annually. This would include about

37 with spinal cord injury, 84 with traumatic brain injury, three with other injury such as bilateral amputee, major internal injuries and severe burns.

Guidelines would establish the extent of the injury.

Standards would be developed for service providers covering a range of skills, training and experience. Care providers would be approved by the LTCS authority to ensure quality of service. The model of service delivery would as far as practicable, give control of the selection of service providers and coordination of services to the injured person and/or their family.

It proposed a board of the long-term care program with authority that would:

a. oversee the fund, including its investment;
b. approve the guidelines for eligibility and care need assessment;
c. approve the assessor fee schedule; and
d. approve the care provider fee schedule.

An Advisory Council would be established including two practicing health professionals with relevant experience in treating persons with catastrophic injuries, consumer representatives from relevant disability organizations and care provider representatives. The Council would advise the minister and the government on the operation of the scheme.

The scheme would be fully funded through a levy on motorists collected in conjunction with motor accident insurance.

Funds paid into the scheme would be the full cost of providing lifetime care and medical treatment services to injured people. The pooling of the funds would protect against the possibility of poor estimation of an individual claimant.

For those eligible to enter the LTCS scheme, lump sums would no longer reflect compensation for future treatment lifetime care and domestic assistance performed on an unpaid basis, but would be provided through the scheme. Payments for damages for pain and suffering and economic loss would remain unchanged. In determining the levy, the LTCS Authority would rely on independent actuarial advice to ensure that the fully funded principle is maintained.

The NSW government obtained an actuarial no-fault long-term care costing study which gave a cost estimate based on the number of people injured in the 2005/2006 accident year.

The NSW government ultimately introduced the lifetime care and support scheme (icare) to improve the quality-of-life of the injured person and their family on 1 October 2006 for children under 16 and on 1 October 2007 for adults.

## E. Conclusions

1. The foregoing peer-reviewed scientific evidence collected from evaluations of traffic injured recovery under no-fault compensation models since 2000 prove that health outcomes of traffic injured are improved after elimination of money compensation for pain and suffering.

2. The scientific evidence supports the contention that under a tort system claims are filed in a potentially adversarial environment that can promote the persistence of symptoms in claimants. In the course of proving that their pain is real, claimants may encounter conflicting medical opinions, unsuccessful therapies, and legal advice to document their suffering or disability.

3. The evidence suggests a tort system may influence patients' perception of their medical needs and how insurers/tort require them to legitimize their injury and then influence the patients to pressure clinicians for referrals.

4. A study under the tort system confirmed that too much health care too early after a soft tissue injury negatively influences the prognosis of whiplash patients. Early minimal care that promotes activation improves prognosis.

5. Fewer persons file claims for whiplash injury under the no-fault system, and those who did recovered faster than similar claimants under the tort system. Similar results have been produced in Alberta in respect of recovery periods for mild traumatic brain injury.

6. Scientific data studying long-term outcomes after orthopaedic trauma led to the conclusion that compensation schemes may impede recovery from injury by producing worse outcomes for compensable orthopaedic trauma patients, compared with non-compensable patients.

7. Under both the tort and the no-fault systems, the involvement of a lawyer was associated with delayed claims closure.

8. All of the foregoing medical evidence support the finding of the trial judge in the *Hartling* decision that:

   > Unfortunately, the nature of the tort recovery system which is adversarial requires patients to focus on their pain and disability which is counter to the best methods of treatment which focusses patients on their abilities.

9. Under a no-fault system, there is no financial incentive to delay recovery since claimants have immediate access to medical care and other benefits without being required to substantiate their injuries.

10. The consistently developing medical evidence from 2000 to the present demonstrates that health outcomes of traffic injured are not well served by the tort system and preservation of any of its components in the Alberta automobile insurance compensation system is not justified.

11. This is supported by testimony of health practitioners in the recent court challenges in Alberta and Nova Scotia.

12. Experience from other jurisdictions consistently suggests extended treatment and some investigative procedures, such as imaging and invasive treatment, are not recommended for most soft tissue injuries and can be linked with dependence and poor health outcomes.

13. New South Wales and Ontario experience provides further caution that fee for service payment models' treatment of traffic injured tend to support quantity over quality. Overtreatment occurs in compensation systems because sometimes the practitioner is not aware of or committed to best practice guidelines for soft tissue injuries and others are influenced to recommend treatment or extend treatment in response to pressure from patients or their families.

14. A study of patterns of early clinical care involving visits to general practitioners, chiropractors, or specialists did not show that early, aggressive care promotes faster recovery. Whiplash injury is less of a problem in jurisdictions where the involvement of healthcare providers is minimal.

15. In addition to establishing objective evidence that no-fault models are superior to tort models from a health outcome perspective, pure no-fault models have demonstrated the greater opportunity to collect reliable treatment data to inform, innovate and improve treatment modalities to traffic injured.

16. The implementation of the pure no-fault model in Québec enabled the Québec Task Force to utilize the data to establish a classification system for whiplash associated disorders as WAD I, II and III, and this system is now being used worldwide. This experience is strong evidence that a pure no-fault model for accident compensation can not only provide ongoing data to inform consistent, appropriate treatment for various categories of traffic injuries but is also better suited to utilize the data collected to implement innovative techniques to improve treatment more effectively and expeditiously.

17. The New South Wales' experience also supports the importance of collecting and analyzing data on patterns of rehabilitation and recovery to validate approaches that produce optimal health and functional outcomes for soft tissue injured persons. It provides supporting evidence that any reformed medical assessment model must ensure that treatment paths are consistent with established and current best practice guidelines to facilitate optimal recovery and containment of treatment costs. Recognition is also necessary of those claimants with reduced motivation to comply with essential self-management aspects of a treatment program.

18. The New South Wales' experience also reinforced support for an independent panel of medical specialists who are the sole decision makers about assessment and treatment issues, noting that accessibility to skilled and qualified experts prevents delay and adversarial elements, such as duelling experts that can result in delay, increased cost and potential impaired recovery.

19. The evidence and experience pertaining to the development and implementation of the Diagnostic and Treatment protocols since 2004 provides reliable validation of the benefits of that innovation and should be used as a foundation in the transformation of treatment of traffic injured in Alberta.

20. The Committee was satisfied that all the peer-reviewed health evidence it examined further bolstered its conclusion that a pure no-fault model would be the optimal choice for treatment of Alberta traffic injured.

## F. Recommendations

1. Medical and health treatment for all traffic injured in Alberta should be reformed to incorporate and conform to consistent evidence-informed practices.

2. All reforms that can align with improved health outcomes for traffic injured should be incorporated into a reformed care and compensation traffic insurance model.

3. In light of compelling evidence that being involved in litigation can adversely affect a person's health, any services provided under the current model that directly or indirectly promote or sustain litigation, adversarial conditions, points of dispute, duplication of examinations and assessments or that otherwise do not promote prompt and optimal recovery of traffic injured should be eliminated.

4. Specifically, roles of service providers of treatments, follow-up visits, and referrals when patient health benefit, or medical need is not based on reliable evidence, or consultations in respect securing benefits, or income replacement, which may as a consequence prolong recovery by legitimizing patients' fears and creating unnecessary anxiety, should be eliminated.

5. Reform legislation should promote early acceptance of genuineness of reported symptoms of traffic injured and delivering prompt and appropriate pathways for ensuring appropriate treatment.

6. New protocols for treatment of all traffic injured must be introduced and regularly reviewed and refined with data developed and analyzed to minimize or eliminate overtreatment, undertreatment or ineffective and incorrect treatment of traffic injuries.

7. A reformed care model for Alberta should build on the existing DTPR model and expand it to be available all traffic injured under a pure no-fault care model.

8. The long-term care medical professionals should be engaged to assist in implementation of a long-term care model that would best serve the needs of those severely injured in traffic accidents.

9. The no-fault long-term care model established in New South Wales in 2007 should be considered as an example for persons severely injured in traffic accidents. The property and casualty insurers who distribute automobile insurance policies in Alberta should be engaged in dialogue to determine the viability of establishing a funding pool model to support a long-term care program.

10. A pure no-fault care model for Alberta will optimize development and application of data technology including innovations such as artificial intelligence to further identify and add evidence-based improvements to diagnosis and treatment to provide continued renewal of treatment modalities.

# VII Actuarial Evidence from Tort Accident Injury Compensation Systems

The findings and conclusions from various actuarial studies and testimony pertaining to tort accident injury compensation systems reviewed shows that between 1974 and 2019 the main reason for automobile insurance premium increases in tort motor accident compensation models was and remains continually increasing bodily injury loss costs. The key features are summarized below.

## A. *1990 Report on Alberta Motor Vehicle Claims Survey* (Cheng 1990)

The *Cheng 1990 report* to the AAIB documented the following findings:

a. About 2/3 of injured claimants including passengers and pedestrians were not at-fault and could claim for both tort and no-fault benefits. Over half the claimants had soft tissue injuries and received about 25% of the total claims dollars. About 10% of claimants had permanent injuries and about 3% of claimants had permanent and total disability.

b. In 1990 claims under $10,000, 83.1% of the claims related to non-pecuniary losses. For claims between $10,000-$75,000 non-pecuniary claims represented 57.1% of the claims. For claims over $75,000 non-pecuniary damages represented 18.2% of the claims.

c. Injury claims were increasing at 12.9% per annum which was more than twice the CPI increase. Claimants with counsel received more claim dollars for similar injuries. The rate of increase from 1988 to 1990 was 14% which was about 3% higher than claims without counsel.

d. 50% of claimants were represented by counsel.

e. The study could not fully capture the entire spectrum of legal expenses, only some payments of party and party costs which are expenses payable by a litigant for appearing or carrying on as a party to a proceeding which are allowed by the court according to Schedule C of the Rules of Court. It noted that the entire amount of payment of legal fees to claimants' lawyers was unknown.

f. After examining the data from 1972 to 1989, it found loss costs had increased dramatically since 1985 mainly due to the increase in bodily injury loss costs.

g. Claimants with minor injuries were overcompensated in the tort side of the system relative to all other traffic injured. Claimants with catastrophic injuries were undercompensated in the tort side relative to all other traffic injured.

h. At-fault claimants were inadequately compensated for their economic losses relative to tort claimants.

i. There were structural deficiencies in the delivery of benefits in the current system.

j. All payments required under the current system were subject to delays.

k. The data proved that there was a pricing problem in the system which would persist in the future without some measures to counteract it.

l. Loss costs would continue to increase because of continuing increases in frequency and severity of claims unless bodily injury costs were curtailed and effective cost saving measures undertaken.

## B. *1998 New South Wales Ernst & Young Report*

The 1998 New South Wales Ernst & Young reported in NSW that:

a. claims costs were rising at a much higher rate than was the Consumer Price Index with no reason to believe that this unsatisfactory claims cost change rate trend would end;

b. the compensation benefits were not fairly distributed among automobile accident victims;

c. persons with severe injuries did not receive adequate sums to fund future care and those with non-severe injuries received more than they needed;

d. a large percent of the scheme's resources (approximately 50%) were diverted to service providers involved in the determination of eligibility of benefits; and

e. future changes had to address the scheme's cost structure and a more equitable distribution of benefits.

## C. *Motor Vehicle Insurance in British Columbia – at the Crossroads* (KMPG Report 1996)

The *KPMG report*, which was prepared for ICBC and the government of British Columbia, made the following findings:

a. motor vehicle insurance costs increased at rates higher than the rate of inflation from 1986 to 1996;
b. the average premium increased by 135% over the same period;
c. claims costs represented about 79% of total expenditures and increased at more than 6.5 % per year after inflation;
d. claims operating cost expenses and commissions grew 5% per year faster than inflation from 1985 to 1995;
e. the introduction of premium tax in 1987 added to the increase in product costs;
f. bodily injury claims represented $0.50 of every dollar of claims, including legal and other tort claims costs;
g. the real bodily injury claims cost per insured vehicle nearly doubled over the ten year period;
h. the trend was due to increases in claims frequency and average cost per claim;
i. bodily injury claims grew at 7% per year, far faster than rate of property damage claims;
j. bodily injury claims increased 50% over the past 10 years;
k. the propensity to file personal injury claims increased by 40% over the 10 years;
l. the average bodily injury claim was four times the average property damage claim; and
m. rising claims costs and numbers appeared to due to:
    i. increasing propensity and ability to maximize awards especially due to non-economic losses;
    ii. growing sense of entitlement to receiving motor vehicle insurance payments;
    iii. growing inclination to focus on pain and suffering;
    iv. increased advertising by lawyers and tendency to seek legal representation;
    v. willingness of courts to increase types and amounts of compensation awards; and
    vi. increased incidence of fraud.

A cost breakdown of ICBC dollars from 1995 data showed:

a. 80% of the costs related to payments to claimants and claims related expenses;
b. 8% of costs were paid for distribution of the product;
c. 9% of total expenses or $223 million represented total legal costs;
d. $670 million were paid to external suppliers, including defence counsel, glass repair shops, car rental agencies, medical payments and the like; and
e. brokers were paid $151 million.

In total, only 2/3 of claims costs and expenses were put in the hands of claimants for their claims or damage repairs. For personal injury claims, claimants received only 72% return with 17% paid to legal services.

An explication of legal costs for 1995 to ICBC was as follows:

a. BC in-house legal department – about $7 million;
b. ICBC external defence counsel hired to defend tort claims – about $53 million;

c. cost for expert reports, independent adjusters and private investigators required for litigated claims – about $17 million; and
d. estimated plaintiffs' costs including contingency fees and disbursements – about $146 million.

## D. KPMG – 2003 Government of Alberta Implementation Team

In 2003, KPMG was retained by the Alberta implementation team to advise what average premium would be required in Alberta to align it with other provinces and then calculate the reduction required to achieve the caucus policy directive. The number was between $200 and $250 million. It was asked to determine the amount that would be saved by imposing a cap of $4,000 on minor injury claims. The definition of "minor injury" was continually restricted by Caucus with the result that the cost saving was continually reduced and never accurately calculated.

## E. Addie Closed Claims Study 2003

The closed claim study comparison performed by Barb Addie (Addie) showed that 62% of claimants suffered soft tissue injuries only and received 43% of the settlement amounts. Another 29% received settlement amounts for soft tissue and another injury. 91% of all claimants suffered some form of soft tissue injury. These claims represented 93% of the settlement amounts. 71% of the total settlements were for pain and suffering.

Comparison to the 1991 closed claims study from AAIB showed that the percentage of pain and suffering was very similar among the three surveys. The underlying data were adjusted for inflation to bring them to the same point in time.

Had Addie's 2006 study data been used by KPMG for the Implementation Team, instead of the 2002 New Brunswick study, a larger cap would have been needed to achieve the government's objective of reallocating 20% bodily injury costs to lower premiums and enhance Section B benefits.

## F. Testimony of Actuaries – *Morrow Case* 2008

Mr. Ted Zubulake, GOA actuary, produced a report that said:

a. Between 2000 and 2003 auto insurance premiums sharply increased and became less available in the regular insurance market.
b. These insurer actions were mostly due to bodily injury claims costs.
c. The escalation of bodily injury costs was likely driven by minor soft tissue injury claims costs.
d. IBC studies in New Brunswick and Nova Scotia and his own of Newfoundland and Labrador found that traffic accident soft tissue strains and sprains accounted for a high percentage of bodily injury liability claims and claims payments, and most were for pain and suffering.
e. The Newfoundland and Labrador study dated March 2002 reported 67% of claims came from soft tissue injuries and sprains of the neck and back with no other injuries.
f. At the time the GOA was considering automobile insurance reforms, auto claims costs were increasing primarily due to higher minor soft tissue injuries.
g. Increases in Section B accident benefits for medical and rehabilitation compensation from $10,000-$50,000 would reduce bodily injury liability costs by reducing the injured person's out-of-pocket medical and rehabilitation expenses.
h. Bodily injury coverage financial results contributed to the insurer action between 1986 and 2004.
i. The greatest increase in costs through those periods was third-party liability coverage and escalation of bodily injury loss costs driven by minor soft tissue injury claims costs.
j. KPMG found that of 1441 claims of combined closed claim studies, 1077 were for minor injuries which constituted 74% of the claims examined as ultimately defined by GOA.
k. The average pain and suffering cost for minor injuries in 1990 was almost $3,000. In 2003, the average pain and suffering cost for minor injuries was almost $17,000 in 2005 dollars. This increase, greater than 10% per year, was in excess of the compounded rate of growth. Thus, minor injury accident related injuries such as soft tissue strains and sprains represented a high proportion of bodily injury liability claims costs.

Dr. Ron Miller, actuary, testified that:

a. From 1984 to 1999 the average cost of third-party liability bodily injury coverage was increasing at a steep rate compared to the all Canada CPI.
b. From 1994 to 1998 claims frequency increased on average by about 2 to 3% per year while claims severity increased by 7.3% per year resulting in an increase in claims cost per car on average of 9.8 %, while CPI inflation averaged only 1.6% per annum. Those results imposed large stress on the system which was likely the cause of the increase in rates, consumer dissatisfaction and resulting reform measures.
c. From 1999 to 2001 claims costs reduced and then spiked to the highest point in 2004.
d. In 2000 the loss ratio at 100% and 110% was unprofitable (for insurers), reflective of the increase in bodily injury claims costs not being offset by sufficient premium increases.

e. In 2003, before the reforms were effected, claims were disappearing. A possible explanation for this was that consumers receiving premium increases of 10% or more may have become conscious of the proposed reforms, the issue of affordability and knew that reporting an at-fault claim would trigger a large premium increase.

f. Miller had seen a similar pattern in other jurisdictions, such as New Brunswick and Ontario showing that when there are dramatic premium increases, claims disappear from the system. He found strong statistical evidence that the third-party liability claims costs declined by 37%.

g. Since the reforms in January and October 2004, third-party liability bodily injury costs declined dramatically.

h. It was plausible that:

   i. post reform some minor whiplash injury claimants were no longer motivated to seek settlement or the protocols were working as intended or both, such that claimants were exiting the system faster or not entering it. In any case this effect leads to a one-time reduction in frequency and severity for both third-party liability.

   ii. if claimants and their lawyers climb the learning curve, those who had left the system may begin to re-enter it and all claimants find ways to increase compensable damages resulting in a one-time change to a positive forward trend in claims frequency and claims costs.

Miller did not believe the 2004 and 2005 industry profits were greatly and unnecessarily accelerated by the product reform.

Miller noted that KPMG opined that the cap would be responsible for 70% of the savings and 30% would be due to the gross to net and collateral sources amendments.

Miller did not agree that the insurance cycle would have corrected the premium problems.

Mr. Joe Cheng, Actuary, testified that:

a. between 1986 and 2002 bodily injury claims were rising faster than the CPI by 28%;

b. between 1986 and 2002 bodily injury claims per 1000 vehicles had increased by 72%, which is a significant factor contributing to premium increases;

c. compounding the increase in claims by 72% and the inflation over the CPI at 28% presents 120% rising faster than the CPI;

d. premium increases in 2001 to 2003 were mainly due to higher bodily injury claims costs and the need to redress the accumulated premium deficiency;

e. auto insurance premiums in 2002 and 2003 increased mainly because of the high cost of bodily injury costs which were rising at about 120% more than the CPI. In hindsight, if insurers had realized that was occurring at that time consumers would have had to pay 45% more than the CPI in that period; and

f. if that trend continued, Albertans would find their own insurance premiums less affordable.

## G. *Pinnacle Study 2017*

The *Pinnacle Study in Ontario*, which examined third-party liability bodily injury closed claims pointed to long recovery times and over treatment of injured persons, according to Marshall. In particular, it found that:

a. soft tissue injuries or associated with claimants accounted for 67% of the total claim payments in the study;
b. roughly 70% of the claimants were classified in the police report as having no, or minimal or minor injuries. Nonetheless the majority of the claimants developed serious and permanent impairment and the median time lost from work for these claimants was seven months; and
c. in Ontario annually about 25% of injured persons make bodily injury tort claims and to pass the verbal threshold, must produce medical evidence that they have suffered a permanent serious impairment of an important physical mental or psychological function a very high level of impairment from what were mostly soft tissue injuries.

## H. *Claims and Cost Study* November 2019

The *2019 Claims and Cost Study*, J. S. Cheng & Partners, Inc. November 7, 2019 established that:

a. Between the years of 2011 and 2017 Alberta had the lowest casualty rates among the 10 provinces. Since 2010 most of the claims cost escalation was found to be attributed to bodily injury claims which accounted for 71% of the change in claims cost per vehicle from 2010 to 2018.

b. Adjusting the 2010 claims cost per vehicle to 2018 by the change in the CPI, bodily injury claims cost accounted for almost 100% of the escalation.

c. Non-pecuniary damages are the major cost driver with an annual inflation rate of approximately 9.9%. A significant increase in the incidence of four injury types: chronic pain, psychological injury, concussions and injuries involving the temporomandibular joint was found. These accounted for 78% of the non-catastrophic claims in 2017. (4 top injuries)

d. There were found two compounding factors: first, the number of claims with one or more of these four injuries increased by more than 88% and second, once a claim was presented with one or more of these injuries, its settlement value multiplied by 6 to 8 times versus other non-catastrophic injuries. Combining these two factors showed these four injuries were the fastest growing injury segment accounting for 46% of bodily injury loss dollars in 2010 and 78% in 2017.

e. In 2017, 7% of claimants presented their claims with injuries involving TMJ and the claims amount was 15% of all bodily injury claims amounts.

f. This report recommended the government consider no tort or non-pecuniary damages for automobile accidents occurring in Alberta for a long-term solution to bodily injury claims cost. In return mandatory accident benefits would include a schedule of lump sum benefits for non-pecuniary loss. This solution was used in Québec in controlling bodily injury loss costs because the scale of benefits does not increase faster than the CPI.

# I. Findings

1. The foregoing actuarial information shows a continuous trend in Alberta from 1974 to 2019 as first reported upon in 1990, namely, that bodily injury loss costs in the Alberta traffic accident compensation system have been increasing, often at more than twice the rate of increase in CPI and have been the primary cause of auto insurance premium increases.

2. The same trend was found in British Columbia and New South Wales, and elsewhere in Canada.

3. Until the 2003 reforms in Alberta, no substantive measures had been legislated to slow or halt the inflationary problem. The original intent of those reforms was directed to a much larger reduction in the tort component than was eventually put into effect.

4. In the result, the 2003 tort reforms produced only a temporary curb on the increase in bodily injury loss costs. From the latest *Cheng* closed claim study, it could be seen that the tort component after 2004 to 2019 directed its focus on elevating certain other non-catastrophic injuries above the cap, and produced a strong spike in bodily injury loss costs despite reduction in frequency of traffic accidents.

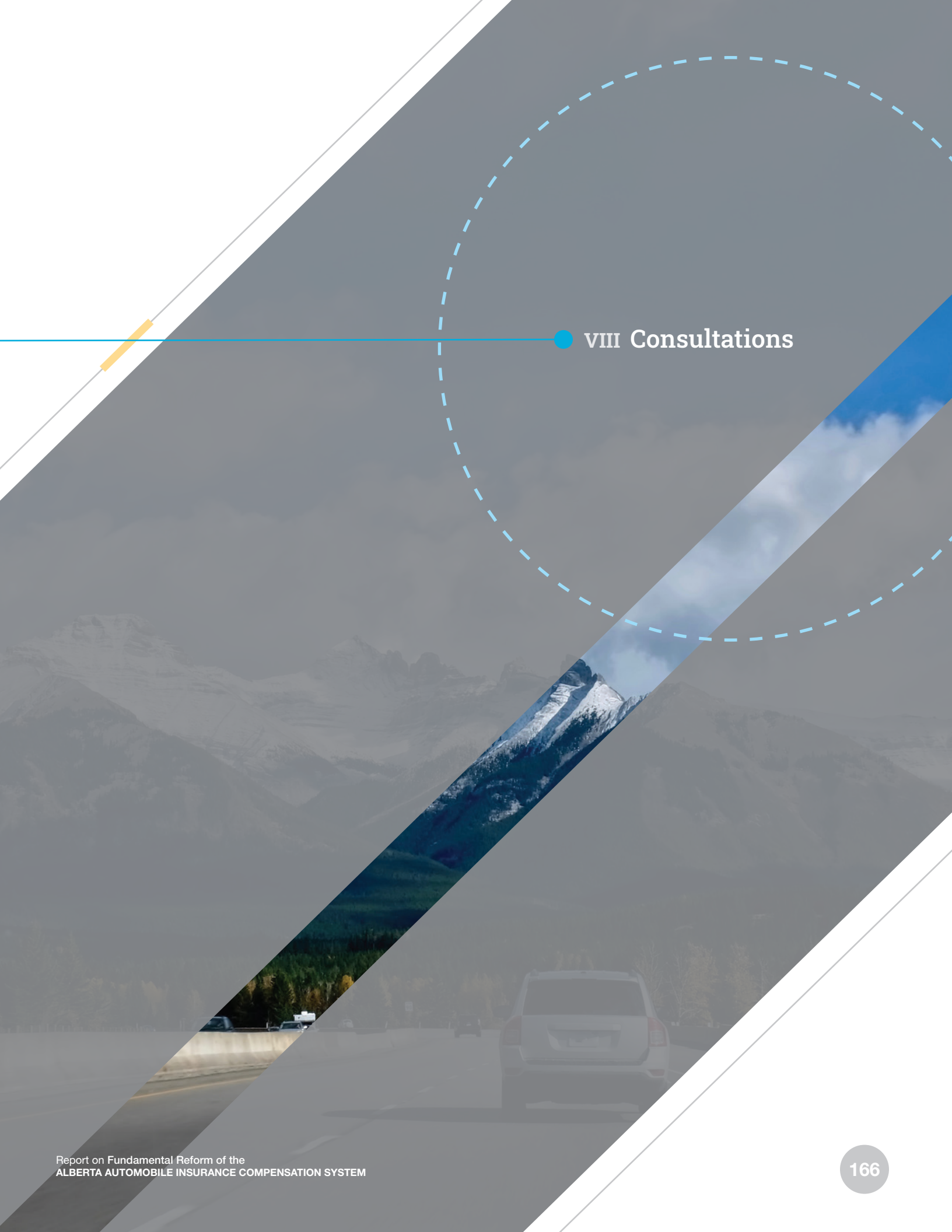
# J. Conclusions

1. From the actuarial evidence reviewed, the Committee concluded that since non-pecuniary awards for catastrophic injuries and minor injuries have been capped, where those four categories of injuries isolated in the *2019 Cheng Claims and Cost Study* were not, claimants in those four categories have been overcompensated relative to the minor and catastrophically injured.

2. The primary cause of high and continuing increases in auto insurance premiums in Alberta and in other tort jurisdictions is that uncapped bodily injury loss costs continually increase and at a rate well in excess of Consumer Price Index increases for other market commodities.

3. Efforts in other tort jurisdictions to provide a solution to the excessive effect of tort on the cost of bodily injury claims have failed despite well considered experiments to preserve and balance both tort and no-fault components, as for example, in Ontario and New South Wales. The actuarial evidence supports the conclusion that the only effective and sure means to secure premium stability and sustainability in the long term is to remove the tort components altogether and to replace them with the best and proven innovations resulting from the pure no-fault models implemented in other jurisdictions.

# VIII Consultations



# A. Evidence of Public Consultations 2003

The following summary documents consultations with service providers, industry experts, Legislative members and others during the auto insurance reform process in 2003. The original reform proposed was to impose a monetary limit (cap) upon most injuries except the most severe. There were many consultations some of which resulted in the cap being restricted to a far more limited group. Even with this substantial restriction, in the end there was no broad consensus supporting the reform package. As well, a failed challenge to the legislation was launched extending through some years before final determination by the Court of Appeal.

## Summary of consultations on auto insurance reform in Alberta 2002-2004

In 2002, Alberta Finance (AF) released a discussion paper seeking feedback on issues including limiting loss of income awards to net rather than gross wages, preventing double recovery on lost income and medical and rehabilitation expenses for more than one insurance plan, providing enhanced benefits for person with catastrophic injuries and giving drivers the option of increasing their Section B accident benefits. It asked for feedback as to other measures to attain a balance between Alberta motorists and traffic injured.

### 2003

In January 2003 responses were received from Insurance Bureau of Canada (IBC), Alberta Civil Trial Lawyers Association (ACTLA), Insurance Brokers Association of Alberta, the Canadian Paraplegic Association and others. Following the consultations, AF drafted legislation tabled as Bill 33 but instead decided to conduct further consultation on broader ranges of options.

The GOA asked ACTLA and IBC to recommend a joint solution for automobile insurance reforms which the GOA would seriously consider. These associations could not agree on several major issues and thus issued separate responses. (April)

An implementation team was formed consisting of Donahue, Renner, Brian Kapusianyk, Gregg Hansen, Nick Geer, Shelley Miller and Alain Thibault. Messrs. Hansen and Thibault were insurance company executives. Mr. Geer was the then CEO of ICBC. Kapusianyk and Miller were Calgary and Edmonton lawyers respectively.

The implementation team was given briefing and background material pertaining to the Alberta insurance system, the process for rate setting, information pertaining to the Facility Association, the Motor Vehicle Accident Claims Fund, a summary of other Canadian auto insurance systems, complaints received from the GOA, an analysis of media coverage, submissions from ACTLA, IBC, information about reviews from Nova Scotia, New Brunswick and Ontario, numerous independent studies and a summary of Alberta whiplash decisions between 1992 and 2002.

The team consulted with various service providers and interest groups. The potential for a cap was the subject of much public discussion. (August).

The team began to look at the soft tissue injury definition but then a scare campaign was initiated that the government was going to cap all claims in the province.

The minor injury definition became very important to GOA Standing Policy Committee (SPC) and evolved several times due in large measure to feedback from SPC, stakeholders, insurers, legal industries, consumers and victim groups.

There was still a huge media campaign about minor injuries and increasing premium costs. Insurers were still applying to the AAIB for premium increases and the concern was that premiums were still increasing and reductions would reduce something already arising. Insurers were very upset. (October)

After consultation with victims, lawyers and other stakeholders, the team developed proposals presented to SPC on October 15, 2003.

At an SPC meeting on October 15, 2003, discussion with 25 to 30 Legislative members ensued as to what should comprise minor injuries which resulted in a consensus that they should consist of sprains and strains.

During the development of the minor injury definition and protocols, there were consultations from certain insurers, IBC and ACTLA for feedback.

After drafting the *Minor Injury Regulation*, relying on the advice from Dr. Larry Ohlhauser, (Ohlhauser) the team sought comments from the insurance industry and ACTLA.

The team continued to meet with stakeholders and discuss reforms and development of the definition which contained an 18 month time limit for recovery of sprain, strain and flexion and extension spine injuries. The medical community said an 18 month time limit was not supported from a medical standpoint. (November)

Ohlhauser met with the team on November 7, 2003 and discussed the definition of minor injury. He engaged professionals and representatives of healthcare groups, proposed a model for consideration and enlisted a core working group to provide input as to the diagnosis and treatment of all soft tissue injuries. He interviewed clinicians experienced in treating soft tissue injuries and interviewed others. He prepared a presentation for meetings with consumer and injury groups including insurance and legal. He received feedback from IBC and WCB.

Ohlhauser engaged a core working group which originally included members of the Colleges of Physicians and Surgeons, Physical Therapists, and Chiropractors of Alberta, the Alberta Association of Occupational Therapists, Alberta Medical Association, Massage Therapists and Psychologists Associations.

Ohlhauser presented to the College of Physicians and Surgeons, the Alberta Medical Association and other service providers to explain the planned regulatory changes.

## 2004

In February 2004 the team consulted with interest groups and disseminated regulations to various organizations and received numerous responses.

At a meeting on May 4, 2004 the remaining regulations were deferred. Between this date and the next meeting certain service providers wrote to object to the proposed regulations.

Ohlhauser had meetings attended by over 600 practitioners across Alberta during September 2004. He completed preparation of an interpretive bulletin in September 2004 outlining new protocols for diagnosis and treatment of auto accident minor injuries which went into effect on October 1, 2004.

Dennis Gartner, then Superintendent of Insurance, (Gartner) considered the main aspect of the debate was the insurance industry demanding a cap and trial lawyers rejecting any cap being imposed.

Gartner admitted that the insurance industry, the trial lawyers, IBC and the brokers considered the consultation was inadequate but he concluded there was much consultation. He did not think it would have resulted in a consensus and his view was the consultation was adequate.

After the legislation was passed, insurance industry representatives objected to various aspects of the reform.

As well, a failed challenge to the legislation was launched extending through some years before final determination by the Court of Appeal.

# Conclusions

Based on the foregoing, as well as review of experience from other provinces, the Committee concludes that automobile insurance reform is not a topic on which legislators can expect to secure broad support for the reasons that the subject is examined by so many different persons and groups from different angles, as well as from short, medium and long term perspectives. Previous attempts in Alberta to negotiate auto insurance reform for consensus among groups with vested interests showed that the original goal was diluted through disagreement among constituents, which resulted in half measures and undermined the long-term solutions the reform originally intended.

## B. Findings from 2020 Public Survey

In addition to providing the Committee with specific terms of reference to develop and provide recommendations for reform of Alberta's automobile insurance system, the Minister of Finance announced on December 18, 2019 that the Committee would engage with Albertans, industry stakeholders, and legal and medical experts as it gathered information and developed recommendations on how government can improve Alberta's automobile insurance system.

In furtherance of the public engagement, the Committee invited all Albertans to respond to a questionnaire it prepared. The Committee's designed survey included fifteen pre-set questions, one question inviting the respondents' opinions on how to reduce costs of vehicle repairs or replacement and a final question inviting the respondents to provide any general comments they desired. A copy of the Committee survey is attached as Appendix 2A.

Service providers including insurers, legal and health professionals were specifically invited to respond to five pre-set questions with the additional option of providing a written submission to the Committee. Samples of the questions to service providers are attached as Appendix 2B.

The survey was communicated on February 18, 2020 to Albertans through the Government of Alberta website and through social media, which included links to the survey with a posted completion date deadline of March 6, 2020. A total of 45,571 completed surveys were submitted to the Committee throughout the period of 18 days for response.

In addition, the Committee issued invitations for responses via direct email to some 98 service providers to which it received 34 written responses. After review of those responses, the Committee invited follow-up meetings resulting in 21 interviews. Due to the procedures implemented following the Covid-19 pandemic, those interviews occurred via videoconference with consent of the participants.

After the deadline for receipt of the public survey responses, the Committee learned that, unfortunately, some interference had taken place which rendered 14,552 of the survey responses suspect and contaminated the overall results.

The Leger firm was subsequently retained to complete an analysis of the survey and results, and its report is attached as Appendix 2C to this Report. The characteristics of the 14,552 suspect results are discussed in the *Leger Report* under the heading of Data Quality.

The Committee also received criticism of the public survey, including that the questions were not framed properly, it did not provide adequate balance between options and that a survey that relies upon responses from only anonymous persons who choose to fill out a public survey is not as reliable as a survey which undertakes a random selection of the broader community to complete the array of viewpoints.

The results of the 14,552 suspect responses were excluded from consideration. The Committee took into consideration the criticisms of the public survey process and information provided in the 31,019 responses and addresses the criticisms as follows.

First, the Committee takes full responsibility for the flaws alleged present in the survey questions. However, the Committee can confirm that its survey was not designed to secure any specific oriented results but was modelled after a similar survey circulated recently in a jurisdiction with nearly twice the population of Alberta. All the questions in the Committee's survey pertained to issues that were contained in the Committee mandate.

Although the Committee accepts that 31,019 responses in relation to the entire Alberta population of about 4.3 million may be fairly said to not clearly represent the views of the majority of motorists, it also recognizes that over 30,000 responses are a robust result in comparison to public surveys generally.

The Committee is grateful to those Albertans in excess of 30,000 who took the time to complete the survey since they demonstrated, at a minimum, that the topic is important and they are concerned.

At the same time, the Committee specifically accepts that the issues surrounding the topic of auto insurance reform are usually both complex and emotionally charged for the public and that seeking to obtain informed responses to questions that are concise but contain terms that are open to interpretation by the reader may be marginally helpful at best. This is one reason why the Committee has undertaken to include in this Report comprehensive and detailed explanations about:

a. auto insurance reform in Canada and elsewhere between 1946 and the present,
b. auto insurance reform in Alberta since 1990,
c. health professionals' testimony in recent court challenges to auto insurance reform,
d. scientific studies showing better health outcomes in jurisdictions where tort was reduced or eliminated,
e. actuarial studies and testimony about rising insurance premiums well in excess of the Consumer Price Index increases due mainly to rising bodily injury loss costs, and
f. findings in exhaustive studies of other auto insurance models that have similarities to the Alberta compensation system listing in detail the problems with the operation of auto insurance in balancing the cost of auto insurance against the cost of benefits to traffic injured.

The Committee considers that in light of the foregoing, the Government of Alberta may wish to conduct a more individually focused and reliable survey that selects at random a group of consumers who are familiar with the terms pertaining to auto insurance reform adopted in this Report and desirous of providing informed responses.

The views of several service providers who delivered written submissions and those who attended interviews provided more detail in their responses. These are analyzed in greater detail in Section VIII C below. However, it should not be taken from those lengthier discussions in the interviews that the Committee overlooked the importance of the views of the true stakeholders, namely the motoring public and the traffic injured, whose interests the Committee kept top of mind in every stage of its investigation.

That said, the Committee accepts that the responses to the public surveys could not be viewed as definitive in informing the Committee's final recommendations and did not include or compile in this Report the entirety of the contents of responses received. However, it carefully considered the findings of Leger which, with technological tools, was able to measure topics that were frequently mentioned and salient to the survey. Themes were

identified by linking key words and expressions which in turn represented common ideas in consumer responses.

The Committee found the most salient features of the responses as follows:

a. 63% of respondents indicated that they do not feel their premiums are fair and reasonable;
b. 56% and 64% respectively indicated they would prefer access to affordable insurance rates, as well as immediate to medical/ rehabilitation and income replacement over the right to sue for a cash settlement;
c. 77% of respondents indicated that at-fault drivers should be subject to penalties which could include fines, convictions and higher insurance rates; and
d. 42% of respondents indicated their desire to retain their right to sue in the event of a serious permanent injury.

Respondents clearly indicated that they considered auto insurance premiums are too high, and greater emphasis should be placed on rewarding good drivers and lowering repair costs.

In response to the two questions (Q16 and Q17) dealing with consumer opinions, a total of 26,316 responses were received and frequently mentioned common ideas outlined below.

With respect to Q16, "reducing vehicle repair and replacement costs caused by collisions, theft, weather and the like", the following items were frequently mentioned:

a. higher premiums for expensive cars and bad driving records;
b. development of a parts replacement strategy that pertain to the use of aftermarket parts, i.e. non original equipment manufacturer (OEM);
c. regulate repair shops, caps on repairs and insurance rates;
d. no penalties for hail, theft claims and the like; and
e. increasing deductibles.

With respect to Q17 inviting suggestions with respect to automobile insurance reform, the following were considered both frequently mentioned and salient:

a. making automobile insurance more affordable, offering more discounts and cost control;
b. cap profits and the like;
c. "incentives for good driving, prices do not reflect clean records";
d. "preference for right to sue, don't take away right to sue at-fault driver"; and
e. "larger healthcare access, full recovery of out of pocket expenses and provide necessary treatment."

The Committee has in various other sections of this Report dealt in fuller detail with the subject of reducing automobile insurance rates in the long term so they are more affordable, accessible and provide sustainability.

The Committee did observe however that certain of the above listed issues, such as premiums for expensive vehicles, effect of bad driving records and reducing repair costs with equipment replacement strategy deserve specific comment.

## Higher premiums for expensive vehicles

The AIRB regulates auto insurance premiums for all motor vehicles. Insurers utilize a system named "Canadian Loss Experience Automobile Rating" (CLEAR) to assess expected and actual claims experience of all private passenger vehicles, which takes into consideration elements such as repairability, damageability, risk of theft and other claim factors of each make and model of vehicle. They are then subject to a rating between 1 to 99. The cost of a vehicle does not necessarily pose a higher risk of loss or damage. On the other hand, vehicles more prone to being stolen, such as a 2009 Honda Civic, will be accorded a higher premium due to the higher proven risk factor. Some vehicles such as a 2016 Lexus may attract higher repair costs but may include added safety features that reduce the risk of accidents, which may result in a lower premium reflecting a blend of offsetting risks.

## Bad driving records

Individual driving records are another relevant factor in ascertaining the appropriate premium for an insured motorist. However, as the law in Alberta makes the purchase of automobile insurance mandatory for all motorists, there is a requirement to ensure premiums are affordable. Any driver may commit the occasional driving error, but those who commit frequent errors or errors that constitute criminal driving conduct are expected to take responsibility for such conduct in the form of higher premiums to deter high-risk driving conduct.

To oversee the proper balance between high-risk driving behavior and affordable insurance for the majority of drivers, a system for developing premiums for such drivers known as the "Grid" has been in place in Alberta since 2004. This system requires a complete review to ensure fairness to all Albertans that responds to reflective premiums for good drivers and accessible and appropriate premiums for bad drivers. This system is discussed in more detail in VIII C below.

## Development of an improved parts replacement strategy and oversight of repair businesses

One suggestion frequently referenced in the public survey to reduce auto repair costs was use of aftermarket parts in place of parts supplied by original equipment manufacturer (OEM).

The suggestion reflects the increasing costs of repair of vehicle damage due to a myriad of factors. Under the current system, newer vehicles are required to rely on original equipment manufacturers (OEM) for parts as well as service which has been shown to increase the cost of repair and narrow the number of repair facilities. Owners of newer vehicles are encouraged to attend pre-approved facilities with OEM parts with the implication that vehicle warranties may be at risk if other facilities or parts are selected.

The issue is whether motorists would be served as well if permitted to choose to repair their vehicles with aftermarket parts which may have been previously used or new, but manufactured by entities other than the original vehicle manufacturer.

A voluntary organization known as Canadian Automotive Service Information Standard (CASIS) exists, which provides a framework for the sharing, training, and vehicle repair information between OEM and the aftermarket industry to enable the aftermarket industry to operate and provide consumer choice for vehicle repairs and service. It emerged in response to a demand from consumers after some automobile manufacturers declined to make available all their services, for example, diagnostic tools, parts information and training information, to independent service and repair facilities.

Some other jurisdictions in Canada and other countries have or are developing "Right to Repair" frameworks for new legislation to require OEMs to release all relevant information to allow consumers to choose repair facilities and parts used. The Committee considers AIRB might investigate the benefits of enacting comparable legislation in Alberta to benefit consumers and reduce the cost of vehicle damage repairs.

## Caps on insurance rates

The Alberta automobile insurance industry operates in a highly regulated environment and the regulator's process of reviewing insurance rates before authorizing insurers to charge the same to consumers already endeavors to ensure the premiums fairly reflect the risk of loss and damage.

The Committee is concerned to ensure that Albertans understand that asking or demanding government to "freeze rate increases" is a process that does not address at the same time the cause of rate increases, such as expenses or claims costs, and as a result artificially suppresses rates and leads to unexpected rate increases in the longer term which does not achieve either premium stability or consumer protection.

## Making automobile insurance more affordable

The Committee recognizes that of the more than 30,000 responses from Albertans, 63% responded that they do not feel their premiums are fair and reasonable. In its list of recommendations, it has considered the viewpoints expressed through these responses as well as others.

In the result, however, the Committee recognizes that even with an optimally designed survey, it would be impossible to secure certain voices, such as those individuals who have never been, but will be injured in traffic accidents, including, most importantly, the approximately 160 Albertans who will be catastrophically injured in motor vehicle accidents annually in the years to come.

The Committee recognizes that even with an optimally designed survey, it may not capture the viewpoints of those Albertans who have appetite to digest the entirety of the analysis contained in this Report in order to make more informed responses, or otherwise do not have the time or appetite to contribute to the many faceted dialogue due to other understandable circumstances.

It is for these reasons that the Committee has taken pains to:

a. gather information from as many sources as practical on as many aspects of the operation of the current system that pertain to:
   i. the cost of insurance premiums;
   ii. the impact of the cost of compensation to traffic injured; and
   iii. the increasing costs for property damage,

b. synthesize and analyze all such information in order to make cogent and comprehensive recommendations so that the Legislature can determine what reforms to the current auto compensation system will best serve the combined interests of the only true stakeholders, the traffic injured and the insured motorists.

# Conclusions

1. The responses to the public surveys could not be viewed as definitive in informing the Committee's final recommendations, however, it carefully considered the findings of Leger and noted the following most salient features of the responses as follows:

   a. 63% of respondents indicated that they do not feel their premiums are fair and reasonable;
   b. 56% and 64% respectively indicated they would prefer access to affordable insurance rates, as well as immediate access to medical/rehabilitation and income replacement over the right to sue for a cash settlement;
   c. 77% of respondents indicated that at-fault drivers should be subject to penalties which could include fines, convictions and higher insurance rates; and
   d. 42% of respondents indicated their desire to retain their right to sue in the event of a serious permanent injury.

2. Respondents clearly indicated that they considered auto insurance premiums are too high, and greater emphasis should be placed on rewarding good drivers and lowering repair costs.

# C. Submissions of Insurance Industry Service Providers

## Property Damage Product Reform

Under the current system in cases where the insured motorists have optional property damage coverage, sustain property damage and were not at-fault, their insurers will arrange for the repairs and then apply time and resources to recover the amounts paid, including the motorists' deductibles from the at-fault motorists' insurers, under a legal process known as subrogation.

The Committee found broad agreement from the service providers that the property damage component of the auto insurance compensation system should be converted to a no-fault model known as Direct Compensation Property Damage (DCPD).

Under the proposed DCPD, the insured motorists' insurers will process the costs of repair directly in any event of fault, and thereby eliminate the time and administrative costs of subrogation. A driver who caused the collision will continue to be found responsible for the purpose of assessing appropriate rate adjustment. This reform will deliver a simpler, faster claims process, improve the communication and service to the insured, enable the insurer to predict future loss costs more accurately and likely result in some reduction in premium costs. This model has been implemented successfully in Ontario and the Atlantic provinces.

## Reforms to address risky driving behavior

The Committee also found broad agreement from the service providers in favour of increasing enforcement and penalties for high-risk driving offences to punish and deter the such offenders. The service providers also consistently supported maintaining data to inform increased and wider spread education about the dangers and consequences of risky driving behavior.

The Committee also heard that the graduated licencing program was widely viewed by young and new drivers as designed to build revenue rather than promote safe driving practice and that the efficacy of this program and driver training programs, including retesting of penalized drivers, should be reviewed to improve outcomes of intended goals.

## Reform of the Regulatory process

### Rate Regulation

As stated in the *Osborne report*, the goals of rate regulation should be premium fairness measured against sound insurance principles and market stability to benefit the consumer. The Committee agrees that appropriate rate regulation should provide a cost-efficient mechanism to ensure premiums charged by insurers are fair, predictable and ensure market stability.

There are two types of regulation in provinces where automobile insurance is delivered by the private sector, neither of which contemplates the setting of rates by the regulator. These are, with some modifications, (a) prior approval and (b) file and use.

Prior approval regulation requires the filing and regulatory approval of proposed rates before they are used. Alberta has maintained a prior approval system since 1970 which was provided by an independent agency created by statute. Its jurisdiction was confined to the compulsory section of the policy. Under legislation, it was subsequently replaced by the Automobile Insurance Rate Board which reports to the Minister of Finance and continues the prior approval model.

Under the file and use model, the insurer may put proposed rate changes into effect after filing the same with the regulatory agency. The filing typically includes evidence on losses, expenses and underwriting profits or losses and the proposed rates. Hearings may be held if the regulatory body has questions about the submission.

The Committee is of the view that a privately delivered auto insurance system requires some form of outside review of mandatory and optional insurance premiums to:

a. ensure external protection of the consumer against unreasonable or unjust premiums;
b. provide a modifying influence on insurer conduct;
c. ensure insurers' practices are transparent, and accord with acceptable governance practices; and
d. ensure market stability, accessibility and fairness.

Many insurers suggested as a more effective model:

a. transforming the rating oversight model to file and use;
b. greater transparency in the application of the legislation and regulations;
c. eliminating duplication between the regulators' roles; and
d. oversight of insurers led by principal-based regulation.

Specifically, it was recommended that:

a. there be a separation of the role of the AIRB from the Alberta Superintendent of Insurance so that the latter would focus on regulation, compliance and solvency of insurers;
b. the AIRB would be, and be seen as, independent from government, objective, empowered with full jurisdiction over rating issues; and
c. with such transformation, the AIRB could
    i. respond more quickly to changing consumer needs and market conditions;
    ii. continually calibrate the existing regulations in the best interests of Alberta motorists;
    iii. deliver more consistent enforcement and oversight of the compliance requirements of insurers to provide a more responsive regulatory environment for participants; and
    iv. promote modernizing regulations to enable more digital capability and frictionless consumer processes.

The Committee is of the view that so as to ensure minimal cost to the economy and the consumer, a reformed regulatory model should not be overly intrusive in the rating procedures so as to inhibit market innovation to the detriment to consumers where less intrusive measures will adequately resolve perceived problems, facilitate market innovation, competition and increase product choice for the benefit of consumers.

## All comers' rule and the Grid

As part of the auto insurance reforms in 2004, the Government of Alberta introduced two regulations, one known as the "all comers rule" which required auto insurers to accept all applications for automobile insurance for private passenger vehicles at a reasonable premium and another known as the Grid rating system (Grid), the goal of which was to define and separate motorists with high risk for accidents from those with low or no risk driving behaviors.

There is broad consensus among auto insurers, the Facility Association and some regulators that the Grid is no longer achieving the goal originally intended. Instead, it has become cumbersome, complex and costly to administer and most critically, low or no-risk motorists are subsidizing high-risk drivers. At the same time technical innovations have provided insurers with greater pricing sophistication and in turn ability to differentiate between low and high-risk drivers.

However, there is not broad consensus as to what should be implemented in place of the all comers' rule and Grid. On the one hand, regulators must ensure that all motorists have a reasonable opportunity to purchase the minimum mandatory auto insurance product at a rate that properly reflects their own risks. On the other hand, insurers should be encouraged to utilize their superior technological assets to better deliver varied pricing to motorists at affordable levels, subject to the requirement to adhere to fair marketing practices. History has shown that some insurers or future participants have the appetite to further segment the group of drivers who cannot demonstrate long accident free history yet in other ways are provable low risks.

## Territories

The Committee heard broad consensus that the current practice of maintaining only four rating territories for Alberta was no longer serving the purpose originally intended, which was to accurately assess accident risks according to geographic location. Current data collectable by insurers indicates that other more appropriate and accurate territorial factors affect accident risk and the existing four territory restriction results in unfairness to many insurers.

## Reform of the *Judgment Interest Act*

The Committee also found broad agreement from the service providers for amendment of the *Judgment Interest Act* to make the rate for non-pecuniary general damages correspond with the prevailing rate of judgment interest for pecuniary losses.

Some service providers also suggested removal of the judgment interest for non-pecuniary damages while others, including some legal providers, suggested that such interest not apply for the first two years after the date of loss.

## Optional Insurance Products

### User-based insurance

The Committee heard submissions about the benefits of a new universal telematics tool, known as user-based insurance (UBI) that could improve the insurers' task of proper risk rating of insured motorists. The concept is that a device is activated when a motorist uses the vehicle and objectively tracks driving habits, including miles driven, braking habits, acceleration and time spent driving. Motorists who agree to use of the device will benefit by receiving a discount to their premiums if the information collected demonstrates the operator has low risk driving practices. This tool can objectively and, arguably, fairly reduce or eliminate cross subsidization.

The Committee heard that some insurers are offering a UBI program at no cost on a limited basis with the result that those motorists whose collected information establishes low risk driving behavior earn discounts on the price of their premium.

It was suggested that increased education and endorsement of the UBI programs could foster greater acceptance of its use for more of the motoring public and encourage better education and encouragement of the benefits of good driving behavior for both new and experienced motorists. It was suggested that wide use of such programs would induce safer driving habits, improve traffic safety and reduce accidents.

Some insurers recommended that such programs be made mandatory to allow consumers to benefit from lower rates due to lower usage or due to provable good driving behavior. On the other hand, concerns were also expressed about the disadvantages of making the use of such programs mandatory. First, there was concern that would adversely affect certain motorists to the extent that their insurance premiums would be unaffordable. Second, there was concern that a mandatory program would infringe a motorist's right to privacy or produce unfair results. Third, there was a concern that not all auto insurers currently operating in Alberta have the resources to deliver such programs and would be adversely affected from a competition standpoint. One regulator expressed concern that such programs might result in adverse selection of certain motorists, contrary to public policy.

## Legislation to mandate use of winter tires

Service providers were in accord that the government should legislate mandatory use of snow tires to reduce collisions and serious injuries. The *2019 Cheng Claims and Cost Study* (Cheng) noted that the study conducted by the Ministère des Transports du Québec in 2011 revealed that road collisions in winter and serious injuries due to winter road collisions decreased by 5 percent and 3 percent, respectively. It also noted that after the first two seasons of enforcement it confirmed the use of winter tires from December to March 15 would reduce the accident rate. *Cheng* noted that collision rates increase from October to January. Others indicated the required use of winter tires should extend to March.

The Committee is satisfied that required use of winter tires would contribute to prevention of collisions and fatalities and reduction of health and hospital emergency costs.

## Section B Benefits

The Committee also received reports of concerns as to whether Section B benefits are serving the needs of Alberta motorists. It was also reported to us that in too many instances traffic injured, usually with legal counsel, negotiate a one-time lump sum compensation which is distributed after deduction of the legal fee. The injured person will divert some or all of the remaining cash to unrelated matters while their injuries remain unresolved. The result is that they must resort to the provincial health care system which diverts resources that the insurance claim was intended to cover and ongoing medical treatment for more serious injuries must be borne by social assistance agencies, and, ultimately the tax payers.

One group contended that traffic injured rarely utilized the entirety of the limit of Section B accident benefits. On the other side, concern was expressed about increasing legal representation on Section B claims and that Section B claims costs were escalating by concerning percentage amounts in recent years. In both cases, optimal utilization of these benefits was not being achieved.

Others expressed concern that Section B benefits did not provide full income replacement and in cases of long-term serious injuries, the Section B Benefits are insufficient or do not reflect situational circumstances.

The Committee observed insurers' preparedness to now design competitive and well-structured optional income replacement coverages for consumers at the time of purchase of their auto insurance policy to elect to purchase additional amounts of coverage to ensure compensation for the entirety of their provable income losses.

The Committee considered that if those optional products were subject to reasonable oversight by an independent traffic accident medical expert regulatory body it would ensure appropriate treatment plans were prepared and followed with regular review and adjustment based on data collection feedback and new health treatment innovations, such optional products could address concerns about incomplete coverage for some traffic injuries.

With increasing availability of these options, however, there were also calls for balancing of the greater coverage capacity by the establishment of a maximum recovery standard to orient all participants, including claimants and health providers, toward the goal of restoring the traffic injured as far as possible to preaccident health.

A maximum recovery standard would encourage all participants to move toward closure of the claim at the appropriate recovery milestone, which goal would be better supported by the removal of monetary gain incentives.

## The tort/no-fault issue

The greatest area of differing opinions was expressed in the area of monetary payments for traffic injured. A spectrum of views ranging from leaving the tort compensation component, with a minimum of "tweaks", as is, to the view that tort components were the primary cause of the increases in premiums and accordingly should be fully extinguished or largely diminished, except perhaps a short term retention of tort for a better defined category of catastrophically injured.

It is important to recall that the current auto insurance model in Alberta is in fact a blend of tort and no-fault compensation, otherwise also described as a hybrid or threshold model.

When Albertans, either individually or as a group, say they favour or oppose no-fault, we take them to mean that they oppose or favour enhancing the existing no-fault component of the current system to further reduce or eliminate the tort component.

Those who advocated a full or pure no-fault model intended that all traffic injured receive early and appropriate health treatment, individual assessment and treatment by certified collaborating medical and health experts and expert panels of claims assessors to evaluate and determine their income losses and care costs, past and future. They recognized that an alternative regulatory tribunal making final determinations as to the extent of recovery and impairment and extent of pecuniary losses would provide a replacement to the individual evaluations currently supplied by the tort system. They also recognized that a quick, efficient, and independent alternative appeal process free of legal disputation features would be required and desired.

Another key component of the tort/no-fault debate, apart from proper or enhanced health treatment for all traffic injured, is whether the extent of monetary compensation afforded by the current model should be reduced.

## Reported weaknesses and abuses of the current tort/no-fault model

### Discourages full compliance with treatment and encourages sickness behavior

Some of the industry participants expressed that the current court system encourages the traffic injured to delay their own recovery in the hope of later monetary compensation and encourages service providers to increase treatments for monetary gain. There is scientific and other data to support this view, as set out elsewhere in this Report.

### Negotiated lump sum settlements leave some traffic injured untreated and encourage claims where no treatment is required

As noted with the concerns about lump sum settlements under Section B where the injured person will divert some or all of the remaining cash to unrelated matters while their injuries remain unresolved, which leaves ongoing medical treatment for more serious injuries to be borne by social assistance agencies, and, ultimately the tax payers, the Committee considers these same concerns may arise under the tort recovery model.

### Exaggeration or dishonesty in claims behavior for monetary gain

Service providers have reported cases to us where injured claimants have exaggerated the extent of injuries and losses but have still been awarded substantial monetary court awards. The concern these kinds of cases pose is that other claimants will be encouraged to exaggerate claims. Some service providers have reported concerns about vulnerable traffic injured pursuing litigation with the hope of a future high cash payout while their health, physical, emotional and financial, remains sub-optimally addressed.

The extension of the above concern, also reported by insurers, was increased instances of fraudulent claims, which required increased costs to detect and disallow.

### Diminution of the intended Effect of the *Minor Injury Regulation* and increased claims

We have heard that the effectiveness of the *Minor Injury Regulation* and cap has substantially deteriorated since 2011. It was reported to us that:

a. between 2011and 2019, bodily injury loss costs increased by 70%;
b. sprains and strains with no impairment decreased from 68% to 42%;
c. sprains/ strains lasting longer than six months increased by 700%;
d. concussion injuries increased by 500%; and
e. since 2012, payouts for pain and suffering increased by 40%.

We were not convinced that the majority of these percentage increases were due to greater medical advances or evidenced better identifying injuries, especially in the case of the 700% increase in sprains/strains lasting longer than 6 months.

It was recommended to us that cash settlements for traffic injured should be disallowed where injuries remain unresolved, that compliance with medically designed treatment plan should be a mandatory condition

of settlement and that such ongoing medical treatment should also be incorporated under the Section B accident benefits.

This concern, repeated to us frequently, refers to the non-pecuniary general damage award legislated by the *Minor Injury Regulation* in 2004, which currently stands at $5,296, as it is indexed for inflation. It was expressed that this award is claimed by many traffic injured instead of receiving the treatment they need. It also implies that some of those claimants may not have sustained a physical injury requiring any treatment. This means that such payouts are not benefitting the traffic injured the legislation intended to benefit, yet result in ongoing and increasing costs to motorists.

It was also reported that the current model does not encourage early return to work and thus income benefits should be scaled to produce incentives for that goal. Most quarters who advocated a more robust no-fault model supported a well-defined and thought out approach to standardize evidence-informed treatment plans, rules on experimental procedures and medications, and independent medical assessments to eliminate the adversarial behavior in the current model and provide a suitable substitute for individual assessment of injuries, losses and damages.

It was also recommended that generous benefit levels with affordable rates with income replacement at levels to cover most income earners would eliminate the need for tort. Insurers expressed an appetite to provide excess insurance for high income earners and supported regular indexing of benefits to ensure coverage levels were current.

## Substantial percentage increases in Section B Claims

It was reported that medical rehabilitation costs under Section B had increased from 2011-2018 in ranges of 63% - 246%. The Committee was concerned that such increases might be partly due to suboptimal health treatment resulting in poor health outcomes.

## Uncertainty caused by Court decisions redefining the wording of regulations

It was viewed by many participants in the current compensation system that the original intent of the *Minor Injury Regulation* has been eroded by the effect of court decisions reinterpreting the definition of minor injury and promoting uncertainty by declining deference to the Certified Examiner process contrary to the original legislative intent. One insurer reported its experience that the number of bodily injury exposures settled within the cap has decreased by 25%.

Legal service providers argued that the courts decisions are the sole and proper arbiter of how the legislation should be interpreted and if further litigation around the boundary of the threshold has resulted in a spike in bodily injury cases, that is how the tort system is intended to respond.

Some contended that between 2004 and early 2012 there was an accepted understanding among the participants about what injuries were subject to the limits of the regulation (i.e. the cap limiting the amount of monetary recovery) which resulted in stability of premiums for a short time. However, after a court decision in January 2012, a certain category of injury was ruled to be outside the cap which effect resulted in increased bodily injury claims costs. In turn,

some insurers reported the result produced a 6.4% cost increase annually since 2014 and added pressure to the premium levels.

In May 2018 the Government amended the *Minor Injury Regulation* to reverse the effect of the court decision but participants agree that this intervention leaves ongoing uncertainty about the impact those changes will have on the extent of future increasing bodily injury loss costs and in turn, ongoing premium instability.

What is often overlooked in this gradual rachet effect on bodily injury monetary compensation awards is that the cost of automobile insurance is never adjusted downward. Instead it creates a consistent, sometimes gradual, sometimes sharp, increase. The continuing uncertainty benefits neither of the two true stakeholder groups, the traffic injured and insured motorists. The endeavor to maintain the level of auto insurance premiums at a threshold that the majority of insured motorists can financially bear, while all the service providers' fees gradually increase, is not the optimal mechanism for delivering affordability, availability and sustainability of the auto insurance system in Alberta.

What is often also overlooked through a longer lens, namely the period between 1990 and 2018, is that the only interval where premium levels decreased was between 2004 to 2011, following the 2004 modest tort law reform. The eventual erosion of the law reform caused the trend to revert to an upward trajectory from 2012 to 2018. This trend was continued with period of price instability between 2018 and December 2019. This is ample evidence in the view of the Committee that the current model does not provide long term stability or certainty. For those contending that the current model requires only tweaks, the Committee concludes that none would provide stability, certainty or sustainability.

Except for personal injury lawyers, all service providers emphasized different examples from their own experience of the costly burden of litigation produced in the current system. While those costs are paid by insurers, they are ultimately borne by insured motorists and those traffic injured who are also insured motorists.

Some service providers recommended that a specific definition of what constitutes a catastrophic injury should be defined in the legislation or regulations and the right to sue for tort damages for traffic injuries should be limited to the category of those catastrophically injured. Others recommended all catastrophically traffic injured should receive full no-fault coverage even where they cannot prove their injures were due to a negligent driver.

Insurers have consistently expressed a developing appetite to deliver optional medical and disability products for consumers who desire additional protection in case the benefits provided by the standard auto product do not cover their specific medical expenses. This appears to be intended to deal with the most serious injuries. It appears insurers have appetite to provide in those products an option to the consumer to litigate the measure of the awards in court.

## Expert fees in tort cases reported to be excessive

The Committee also found broad agreement from the service providers that the cost of expert fees in tort cases has continued over time to increase dramatically.

The amount of fees chargeable by experts is not regulated. Experts may charge their customers what the market will bear. When those fees are required to be reimbursed by an opposing party in the form of court costs, there is a limited right for review. For the most part,

the defendants insurers become responsible for the amount that the claimants' lawyer agreed to pay as expert fees.

Various insurers reported that the fees charged by subject matter experts, including medical doctors, engineers, and economists, were adding significant costs to tort claims. Insurers estimated the amount of expert reports at the conclusion of a claim to amount to 1/3 of the settlement amount paid to the claimant and, in turn, ultimately borne by the insured motorists.

One medical expert active in the injury trial process explained that the prevailing fee for medical reports had increased from a range of $800 in 1986 to $3,000-$5,000 at the present date. He himself expressed surprise at how high the range had escalated between 1986 and 2010.

However insurers, self-insurers and some legal voices confirmed that subject matter expert reports fees frequently now range from $20,000-$25,000. For those cases where multiple expert reports were sought from economists or medical experts, in the same or overlapping disciplines, the combined amounts are escalating to ranges of 5 and 6 figures.

Insurers reported cases in which economists' fees were very high because the expert was asked to provide not simply one report but also ongoing advice over the course of the legal proceedings. Others gave examples where two economists had been retained on one file by the claimant's lawyer to opine on different aspects of the pecuniary losses. We also heard that multiple expert reports costs were presented on individual files for an array of medical experts retained to opine on differing injuries.

Insurers reported that even where they attempted to tax or dispute the propriety of those amounts before a court or a taxing officer, they were rarely successful.

Insurers gave specific examples, including one where the trial judge commented unfavorably on the presentation of multiple health experts in a case that was neither difficult nor complex, but the costs required to paid by the insurer were in the range of $400,000 all the same.

Insurers' counsel retain for the defendant opposing experts so that large fees are also incurred on the defence side which add to the ultimate cost of claims.

In a follow up discussion the medical expert commented that the fee levels regulated by the Worker's Compensation system for medical experts were far lower, but cautioned that reducing the maximum fee for medical experts in the Alberta tort system to such levels would deter those experts from delivering expert opinions.

This one example was informative for several reasons. First, it illustrated the extent of inflation of medical expert report fee levels over time. Second, it revealed that current expert fees were in some cases 5 times as high as he thought. Third, it revealed that medical expert opinions were provided in pure no-fault injury compensation models for even lower levels than his own experience in the tort system. Fourth, it revealed that medical experts have a diminishing appetite for participating in tort cases unless it is sufficiently remunerative.

## Concerning examples of undesirable practices to secure optimal tort awards

Insurers expressed the concern that claimants' lawyers had no limits imposed as to the number or timing of experts that could be secured prior to trial while defendants had limits on their numbers of follow up defendant medical examinations and the timing before trial at which they can secure the same and such inequality is exacerbated by the excessive delay in booking trial dates.

Concern was also expressed that some claimants' lawyers would use, as a negotiating tactic with a defendant insurer, the prospect that if an initial settlement proposal was not accepted early in the litigation phase, the claimant's lawyer would retain numerous experts and the fees for same would be added to the bill of costs for payment by the insurer at the end of the process.

Concern was also expressed that defendant insurers often do not learn of a claim by a traffic injured until 2 years after the date of loss when a lawyer must issue a statement of claim to preserve the limitation period. They have no early access to the information about health treatment or income losses and cannot participate in the recovery or return to work of the traffic injured.

As to the concern expressed that that traffic injured seeking recovery under Section B benefits would retain a lawyer to negotiate a lump sum settlement of their benefits and might spend the remaining funds unwisely and then have resort only to the Alberta health care system, legal service providers told us they personally did not engage in this practice. One suggested there should be legislated or regulated prohibition disallowing insurers from entering into lump sum settlements of Section B benefit claims.

Since these areas of the litigation process are not independently regulated and the personal injury legal community does not have the authority to police such excesses, there is no method by which to determine the extent of such practices, either in the Section B realm or elsewhere in the tort system. Accordingly, the reported existence of such practices together with absence of independent regulation is another matter of concern to the Committee.

## Ever increasing amounts for various heads of damages

Insurers have reported that pecuniary and non-pecuniary damage awards continue to escalate and expressed related concerns including court awards increasingly allowing:

a. only small deductions to awards for failure of a plaintiff to mitigate;
b. awards for loss of housekeeping in addition to non-pecuniary general damages where previously those awards were included as a component;
c. loss of earning capacity awards without clear calculation of how the loss was arrived at;
d. duplication of income losses that include both loss of competitive advantage and loss of earning capacity; and
e. generous awards even after finding the plaintiff was not credible.

Insurers expressed concerns that such developments have the unintended consequence of encouraging claimants to pursue tort actions for the hope of increased monetary claim with little downside risk. The tort

system contains no additional mechanism to monitor or control the extent of such examples of escalation.

These matters are concerning to the Committee. It knows that Albertans expect their premium dollars to be allocated to actual and reasonable losses and not increasing numbers of cases where all the surrounding circumstances suggest plaintiffs have secured more than full compensation.

## Cost of legal service providers

Except for legal service providers, who strongly disagreed, the Committee found broad agreement from other service providers that mandatory automobile insurance would be more affordable for motorists if a significant amount of or all legal costs were removed from the system. There was consensus that this could be accomplished by enriching first-party accident benefits and limiting or eliminating the right to sue.

Some insurers expressed concerns about lawyers' contingency fee arrangements with traffic injured including the following:

a. there is no restriction on the amount the plaintiff lawyer may negotiate with a claimant/client;
b. while they may enable claims that have merit to be brought, they also encourage the advancement of claims that have none;
c. although lawyers justify contingency fee agreements and the percentages they charge on the reasoning that the lawyer assumes the risk of the litigation, some argue that in many cases liability is not in dispute and there is little risk that the lawyer will not secure some recovery, so the risk is minimal or non-existent;
d. litigation lawyers now have access to litigation loans and adverse cost insurance and this further reduces any risk of loss to them; and
e. people who rely on a contingency fee arrangements are often vulnerable due to poverty, impact of injuries, educational status or other social disadvantages. [See: M.S. v. DM Junior et al 2014 ABQB 702 (Canlii)]

Accordingly, some have advocated, as with expert witness, fees for caps on lawyer contingency fees.

The Committee conducted some exploration with legal service providers as to the percentages of fees charged under contingency agreements. The legal service providers stated first that contingency fee agreements are private and none volunteered to disclose any of their own fee structures. They seemed prepared to opine that fees could range from 22.5% to 40%. Only one specific example was provided of one, not in their group, who charged a 35% contingency fee for whatever stage the case was settled.

The Committee concluded from this information as well as its own personal knowledge of prevailing contingency fee percentages that that it was appropriate to assume a calculation of 33% as the average percentage recovery of plaintiff lawyers in Alberta traffic injury claims.

Concerns have been expressed that after impecunious traffic injured have eventually settled the claim years later, a large component or even most of the ultimate settlement has been reduced by legal contingency fees and fringe lenders' fees.

## Fringe lenders

The Committee also explored with the legal providers the participation of fringe lenders in the automobile insurance system in Alberta. They told us fringe lenders are financial companies that offer loans to traffic injured persons to help pay for their immediate financial requirements. They exact interest payments on the loans that may range from 24-30%. In addition, they will charge an administration fee which becomes payable if the loan has not been repaid within six months. Repayment is usually secured by an assignment of settlement funds and direction to pay.

Lawyers have expressed muted views about fringe lenders. Some say they discourage their traffic injured clients from taking such loans. Some take a neutral position. Some say if not for their involvement, some traffic injured would not be able to maintain a lawsuit.

No one has measured the effect of these fringe lending service providers who deduct their fees from the traffic injured ultimate settlement.

The Committee considers the comments of the Alberta court in M.S. v. DM Junior et al, 2014 ABQB 702 (Canlii) stating that people who rely on contingency fee arrangements are often vulnerable due to poverty, impact of injuries, educational status or other social disadvantages apply with equal or even greater force in respect of fringe lenders.

The foregoing circumstances indicate to us that the lack of regulation of the activities of all service providers in the tort system contribute to continually escalating costs for the traffic injured and in turn, the motoring public. As well, there may be ongoing practices purportedly to benefit them, but which are not in their long-term best interest.

## Evidence-informed health treatment for traffic injured

The Committee also found broad agreement from the service providers in favour of immediate and better health treatment for traffic injured.

Other than legal service providers, service providers submitted that removing or reducing the tort component would lessen the strain of litigation demands on medical and health professionals whose main professional purpose was treating traffic injured.

Service providers made varied suggestions as to the optimal alternative for health treatment for traffic injured, including:

a. support early, active, and appropriate evidence-informed treatment aligned with and for traffic injuries;
b. pre-approved treatment frameworks for common injuries based on evidence-informed care with associated schedules and policy limits;
c. expedited access to care from prescribed providers;
d. reducing transactional administrative burdens in the system;
e. reducing duplication of services and overutilization;
f. optimize appropriate treatment modalities with consistent quality improvement to achieve recovery timeframe of 2 to 3 years for most injuries;
g. codifying causation so that there can be reasonable finality of injury claims and proper evaluation of the injuries caused or contributed to by the traffic accident as distinct from other causes; and
h. Establishing
    i. definitions of serious and catastrophic injuries;
    ii. definitions of chronic pain and psychological injuries;
    iii. expert medical panels to make conclusive determinations as to which claimants fall into which categories;
    iv. treatment regimes that will include an intended resolution date for the claimant and the service providers;
    v. an independent oversight body to supervise treatment providers to ensure that health providers are following evidence-informed guidelines in regimens to ensure optimal recoveries for traffic injured;
    vi. a structured review process for traffic injured who are not recovering within the normal treatment guidelines or whose recovery has plateaued so that they can be referred for alternative treatment;
    vii. clear return to work guidelines for claimants seeking disability payments to encourage gradual return to work programs, modified duties or retraining for different occupations;
    viii. regulation of fees for health and dental health providers;
    ix. means of collecting and aggregating health treatment data to ensure ongoing monitoring and evaluation of care programs, outcomes and continuous improvement of first-party compensation based on reliable data; and
    x. implementation of an electronic system for auto insurers in conjunction with a traffic injury regulator, health care and ancillary service providers to expedite transmission and processing of claim forms.

## Evaluating the value of the tort component of the compensation system against the burdens

### Delays and increased costs due to tort system

Legal service providers maintained that preserving tort actions for traffic injured was an essential civil right. However, the majority of service providers endorsed the notion that tort actions have an adverse effect on health recovery and claims duration. That majority expressed concern about the delays resulting from the tort system which added costs to settlements and delayed resolution to the detriment of traffic injured.

Legal service providers conceded that the court system was overburdened and thus delays were experienced in setting trial dates or judicial dispute resolution (JDR) dates. Dates for long trials were currently being set for 2023 and 2024. However, since they rarely take cases to trial, they said it does not have a large impact in the majority of cases. On the other hand, insurers reported that many of their litigated claims do not resolve even by settlement until between 3-4 years and occasionally from 5-8 years after the date of loss.

Lawyers also conceded that it was increasingly difficult to book JDR dates with the judges in a timely way because other types of court actions often took priority over traffic injury cases.

Lawyers indicated when they preferred to expedite a settlement process and not endure long delays, they would propose mediation. They said mediators' charges were in the range of $3,000-$6,000. The original intention in mediation agreements was that the parties would split the cost of the mediator in order that both sides took an equal risk and would be equally motivated to arrive at a resolution. The practice was soon replaced by the acceptance by insurers to pay the entirety of the mediation fee. One insurer indicated that 7% of its litigation claims did not settle until mediation.

The Committee concluded that based on input from service providers, the system is likely incurring costs due to mediation which might have been avoided if the JDR system was not overloaded.

In response to requests to the Court of Queen's Bench of Alberta for statistical information concerning traffic injury lawsuits, the following information was provided:

a. Between January 1 and December 31, 2019, 8,562 Statements of Claim for motor vehicle accidents were filed province-wide in the Court of Queen's Bench.
b. Between January 1 and December 31, 2019, 6,393 Discontinuances of Statements of Claim for motor vehicle accidents were filed province-wide in the Court of Queen's Bench.
c. Many of the Discontinuances filed originated from Statements of Claim filed between 2005 and 2018.
d. Of those Discontinuances, 1,104 originated from Statements of Claim for motor vehicle accidents also filed in 2019.
e. Between January 1, 2019 and December 31, 2019, 429 JDRs were scheduled province-wide. Of those JDRs scheduled, 165 proceeded.
f. The court did not schedule JDRs between January 1-17 and 27-31 2019 due to other commitments.

g. Six JDRs were scheduled in Edmonton in January 2019 of which 4 proceeded. 17 were scheduled in Calgary in February 2019 of which 10 proceeded.
h. Typically, the court has scheduled JDRs for a full day but due to the current pandemic is now considering scheduling JDRs for half days.

## Benefits of retaining Tort

Legal service providers were supportive of proposals from other service providers to strengthen traffic safety measures, reform of the property insurance product and changes to the regulatory regime to improve the environment for rating. Their suggestions to reduce costs regarding the tort component of the system were:

a. to amend the rate of pre-judgment interest;
b. to restrict claims for judgment interest until an action has been commenced;
c. to prohibit insurers from entering into lump sum settlements in Section B benefit claims; and
d. to introduce caps on expert fees.

The legal service providers contended that:

a. there was no compelling evidence that the system required enhancing the no-fault features of the current system;
b. mere "tweaks" such as those listed above would be sufficient to restore the affordability, availability and sustainability of insurance premiums to Albertans;
c. the evidence they had seen did not present adequate proof that the system was becoming unstable; and
d. the veracity of claims by other service providers that the costs of claims incurred was exceeding the amounts of premiums collected was questionable.

The viewpoints in the above paragraph were not shared by any of the other service provider groups.

## Case for fundamental reform

The Committee evaluated all the submissions presented on this issue, including groups that were self-insurers, and concluded there are real and costly obstacles present in the tort system that adversely affect the best interests of the traffic injured and the insured motorists of Alberta, some of which include the following:

a. delays in resolution of injury claims;
b. negative impact on health outcomes of traffic injured due to intervention of litigation into the medical treatment regimen for traffic injured;
c. no provision in the tort system for litigation support providers to mitigate such adverse consequences for the traffic injured or the motoring public including the harmful effects of delays, increased costs, and continually escalating costs of settlement recovery;

d. the numbers of medical appointments and expert reports arranged to schedule for traffic injured clients ostensibly to maximize their financial recovery, can prolong the plaintiffs' sickness experience long after the tort action has been concluded; and
e. delays in claims resolution do not adversely affect the fee recovery of litigation support service providers including court experts, mediators, health corporations that provide litigation support, fringe lenders, investigators and the like.

The Committee recognized the underlying concern of legal service providers that fundamental tort reform could have substantial negative impact on their businesses. Accordingly, it took careful account of all their submissions. Nevertheless, it was necessary to recognize certain weaknesses in their submissions which are documented here for the benefit of all involved service providers.

While legal service providers see themselves as performing an important and perhaps indispensable role in representing the current and future traffic injured, and preserving fundamental legal rights, the Committee notes as follows:

a. they do not represent or speak for the majority of traffic injured Albertans who were at fault for their losses and cannot sue for damages in tort,
b. they do not represent or speak for that group of traffic injured who have the right to sue but choose to process their injury claims directly with insurers,
c. they do not represent or speak for those members of the medical and health community that will not accept as patients traffic injured who intend to pursue litigation,
d. they do not serve traffic injured interests after resolving their monetary claims, and
e. all service providers in the compensation system, including health and insurance providers, may rightly claim to represent the future traffic injured.

The Committee considered the contention of the legal service providers that insurers were not being sufficiently transparent about claims of unprofitability in Alberta and that the public information to date did not credibly or authentically verify those facts.

The Committee concluded those contentions were without foundation having regard to the following contradictory factors:

a. auto insurers are subject to substantial regulatory obligations to the Federal Office of the Superintendent of Insurance, under the *Insurance Act of Alberta*, to the Alberta Superintendent and the Automobile Insurance Rate Board, including payment of premium tax;
b. insurers in Alberta are answerable to those regulators as to the profits they earn from their automobile business and those profits regulated by being taken into consideration when the AIRB evaluates filings for rate approvals;
c. all of those regulators have imposed substantial reporting requirements on auto insurers and provide continuous oversight for the protection of motorists who must pay a mandatory premium;
d. as stated by the Alberta Court of Appeal in *Morrow v. Zhang*, "the (MIR) legislation deals with automobile insurance which is private, but highly regulated";
e. no one has suggested these regulators are not properly and continuously performing their statutory supervisory oversight responsibilities in auto insurance in Alberta;

f. the evidence from the *Morrow* case proved that as a result of the October 2003 rate freeze, the insurance industry was required to absorb substantial financial losses;
g. the reports provided to us from insurers confirmed that many of them had again sustained significant financial losses as a result of the rate cap imposed by the Government of Alberta in 2019;
h. information from the AIRB confirmed that the auto industry in Alberta as a whole paid out more in claims than it collected in premiums in 2018 from which we conclude that rising claims costs resulted in subsequent increase in premium prices; and
i. auto insurers are not answerable to the legal service providers for the profits they receive from the auto insurance business they conduct.

Lawyers who make the same argument to the Committee as regards auto insurers' profitability do not see any contradiction in their position, notwithstanding they are not subject to the same level of government regulation.

The legal services providers told the Committee that it is no one's business but the traffic injured how he or she spends their settlement funds. After they have provided legal services to ensure a precise calculation of each of the heads of damages claimable to compensate for past lost income, future lost income, future care, etc. and after lawyers deduct their contingency fee, what is certain under the existing system is that the funds received by the traffic injured will be less than the future care costs and income loss as calculated.

A settled claimant begins with a shortfall and at some point may be left to rely on the health care system to support their long-term care needs. If that claimant spends the settlement unwisely, that day may come even sooner.

If settled claimants are required to be supported by the Alberta Health system or the social services agencies because of shortfalls in their net settlement due to deduction of fees or misspending or both, it is certainly the business of all Alberta taxpayers.

Moreover, the motoring public, which ultimately pays for the mandatory auto insurance product, at rates which have consistently exceeded the Consumer Price Index increases over the last 30 years due to increasing bodily injury loss cost claims, might well consider itself entitled to know more about the composition of those costs including the fees of injury lawyers and may desire that the fees of all other service providers in the automobile insurance compensation system, lawyers, expert witnesses, fringe lenders and mediators be regulated.

The Committee has concluded that the injury lawyers' contention that the auto insurance industry claim that losses have exceeded premium income in recent years is not made in good faith is groundless. It tends to undermine without justification public confidence in auto insurers and the regulators who oversee premiums for the benefit of the motoring public.

By contrast, the submissions of the other service providers, including self-insurers, were more constructive, particularly as regards optimizing better health outcomes for traffic injured, and minimizing transaction costs in the current compensation system.

The Committee observes that its terms of reference provide that the automobile insurance compensation system of Alberta will continue to be delivered by private enterprise automobile insurance service providers.

Given that the insurance industry in Alberta, whatever other flaws it has, has been given the present opportunity to continue to provide the mandatory product to Alberta motorists, the Committee must consider reforms that preserve the role of insurers in any remodelled recommendation and permit them to better fulfil their responsibilities to both of the true stakeholders. They have an obligation to price the mandatory insurance product appropriately for all motorists and traffic injured. They have an obligation to deliver injury compensation benefits to traffic injured.

The evidence in the *Morrow* case proved the willingness of the auto insurance industry to apply their resources to research and study into the issues of treatment modalities to improve health outcomes of traffic injured, including in Alberta.

Moreover, with the history of the imposition of rate caps overruling the regulators and resulting in sudden unexpected financial costs, the fact that insurers are prepared to continue to conduct business in Alberta is a measure of the recent past accountability to the motoring public including traffic injured of auto insurers who carry on business in Alberta.

Under a reformed model, insurers will continue to be subject to oversight delivered by independent regulators with necessary subject matter expertise as regards all aspects of mandatory automobile insurance in Alberta.

The Committee notes that the information it received and evaluated demonstrated that competent health service providers working collaboratively with the private insurers will have on the whole the relevant insight to respond to the requirements of fundamental reform. This is so even weighing that the reform will require transformative changes to health services delivery to traffic injured and more comprehensible and responsive oversight and regulation of insurers and as regards their claims, compensation and rating practices.

While some service providers were prepared to recommend that retaining tort for the catastrophically injured would be acceptable, and others that tort be retained for pecuniary claims only, the Committee observed that the majority favoured reforms that would minimize the tort component as far as possible without compromising the evidence-informed needs of the individual traffic injured. The industry also indicated preparedness to offer optional insurance products to consumers to allay concerns about receiving less than full compensation under a more robust no-fault model.

The Committee is satisfied there will be a sufficient appetite among competent health providers and insurers to collaborate in the design and delivery of a fundamental reform of the accident compensation model to eliminate adversarial conduct and unnecessary commercial operations currently existing between the traffic injured and the administrative health delivery and compensation services they require.

The Committee is satisfied there should be a fully redesigned traffic injury regulatory body populated by independent subject matter experts to establish and maintain optimal health treatment and delivery of services for all traffic injured, for early and appropriate claims assessment.

In the interim the Government of Alberta may wish to establish regulations to limit fees for services for all such litigation support providers, including lawyers, to appropriate and transparent levels for so long as any tort component is retained in the accident compensation system.

## Increase scope of anti-fraud conduct

One consistent argument presented in favour of eliminating cash settlements, awards for non-pecuniary general damages and the tort component is the removal of incentive for claimants to delay resolution for the hope of a higher monetary award. This has already been referenced in terms of slowing or undermining optimal health outcomes. A separate supporting contention is that this reform would also reduce the motivation for fraud and cut significant unwarranted costs from the system.

In addition, there was advocated a provincial fraud coalition strategy to combat all forms of fraud in the system including increasing penalties for fraudulent conduct, permitting insurers to take underwriting action in cases of misrepresentation and fraud on applications and claims, as well as regulatory action to delist fraudulent healthcare providers.

## Time to implement reforms

Various entities cautioned that fundamental reform particularly on the bodily injury claims component of the system could require between 12 to 18 months for complete implementation in order to provide all service providers sufficient time to retrain, re-educate and redirect resources. They counselled that interim law reform measures implemented for effect during the transition period could expedite reduction of auto insurance rate levels. The Committee concluded those could include amending judgment interest legislation, regulating fees of certain service providers, such as plaintiff lawyer contingency agreements, expert witnesses, fringe lender loan arrangements, and capping of non-pecuniary general damage awards for non-catastrophic injuries.

Short term solutions, even implemented promptly, should not be treated as a substitute for substantive reforms that will address the long-term underlying problems of affordability, availability and sustainability.

# D. Conclusions

## Property damage product reform

1. The Committee concluded that a no-fault model known as Direct Compensation Property Damage (DCPD) would deliver a simpler, faster claims process, improve the communication and service to the insured motorist, enable the insurer to predict future loss costs more accurately and likely result in some reduction in premium costs.

## Reforms to address risky driving behavior

2. The Committee concluded that the GOA should increase enforcement and penalties for high-risk driving offences, collect, maintain and disseminate results and data to help further educate consumers about the dangers and consequences of risky driving behavior.

3. The Committee concluded that the GOA should reform the graduated licencing and other driver training programs, including possible inclusion of retesting of penalized drivers, to build public confidence that such programs can effectively promote safe driving practices.

## Reform of the Regulatory Process

4. Prior to 2004, the auto insurance industry typically reported that the then Alberta rate board was nimble, accessible and good to work with. Its areas of oversight and responsibilities were separate and distinct from those of the Superintendent of Insurance. *Osborne* in his report of 1988 said: "the Alberta board takes a relatively informal approached with deliberations in part borne of the belief that competition is the best method to improve the price to the public…it would appear that the Alberta rate review process is functioning well."

5. Auto insurers and the non-profit Facility Association expressed a number of concerns to the Committee, including the operation of the prior approval process, operation of the Grid, all-comers rule, territories, and use of rating factors, resulting in delay and confusion. The Committee concluded that the legislative reforms to the regulatory process in 2004 either are no longer meeting their intended goals or have created new problems, or both.

6. The Committee concluded that one of the reasons for the industry concerns is the overlapping jurisdiction of the AIRB and the Office of the Alberta Superintendent over rating conduct which results in conflicting and reportedly confusing rulings to insurers as well as delays over approvals, which weakens market relevance of the rate applications during the lapse of time.

7. The Committee concluded that the best initial remedy would be to separate the roles of the AIRB and the Superintendent pertaining to auto insurance rating. The AIRB should take exclusive jurisdiction over all rating issues while the Superintendent should govern insurance solvency, financial reporting and other areas its supervised before the 2004 reforms. The Committee was reinforced in this view by the long and successful record of rating management enjoyed by the AIRB's predecessor, the AAIB.

8. The Committee concluded that AIRB, either as it presently exists or reconstituted to enlarge its mandate, should re-examine:
   a. the prior approval model and a file and use model with a designed set of principles;
   b. whether to publish guidelines to apprise insurers of what information is appropriate to include in rating applications relative to risk assessment;
   c. the "all comers rule" and the Grid;
   d. previous Facility Association ceding arrangements and oversight of its premiums to ensure adherence to social policy considerations and actuarial evidence;
   e. the current territories designation;
   f. the benefits of enacting comparable legislation in Alberta to benefit consumers and reduce the cost of vehicle damage repairs;
   g. establishing and publishing a list of prohibited rating factors;
   h. remedies for non-compliance with guidelines; and
   i. the benefit of retaining a delegate of the Superintendent of Insurance in the rate approval process.

9. The Committee concluded that:
   a. reforms in these areas are likely to:
      i. minimize or eliminate the need for sudden legislative corrective actions such as rate freezes;
      ii. reduce cross subsidization of bad drivers by good drivers;
      iii. reflect the driving risk across geographic areas of Alberta; and
      iv. assist more drivers to qualify for mandatory insurance.
   b. greater transparency, education and timely disclosure to consumers of amounts of the premium which are allocated for premium tax, medical treatment, the Alberta health care levy, cost of physical damage claims and bodily injury claims are likely to enhance the consumers' understanding of the components of the mandatory premium.

## Reform of the *Judgment Interest Act*

10. The Committee concluded that the Judgment Interest Act should be amended to make the rate for non-pecuniary damages the same as the rate for pecuniary claims and to suspend claims for judgment interest on non-pecuniary damages for a period of two years from the date of accident loss, as this would reduce the cost of insurance to motorists.

## Optional Property Insurance Products

### User-Based Insurance

11. The Committee concluded that the user-based optional insurance products could be beneficial to consumers and to insurers alike. Expanding the areas of its current use subject to what restrictions or guidelines would be fair to consumers and insurers is a question that should be examined and determined by the AIRB, either as it presently exists or as reconstituted.

## Legislation to mandate use of winter tires

12. The Committee concluded use of winter tires for the winter months in Alberta will reduce the occurrence and frequency of auto accidents and injuries.

## Section B benefits

13. The Committee concluded that the Section B Benefits under the current model had demonstrated many flaws and were not delivering the original goals intended. As a result many Section B claimants were not receiving optimal treatment and recovery. These reports satisfied the Committee that a fundamental transformation of the current system for compensation for no-fault benefits was required. The Committee was fortified in this conclusion by the current appetite of the insurance industry to provide optional supplemental medical benefits coverage to those consumers desirous of purchasing the same.

## The tort/no-fault issue

14. The Committee concluded that the list of concerns about the tort features of the current model was extensive and there should be no efforts expended on seeking to implement modest and piecemeal reforms which have been demonstrated in other jurisdictions to be ineffective. Given that any auto insurance reform is likely to result in dislocation and disruption, the Committee concluded that one fundamental reform on one occasion to all aspects of the current model will best achieve the goals of optimal health outcomes to traffic injured, together with affordability, accessibility and long-term sustainability of auto insurance premiums.

15. The Committee concluded that insurers' preparedness to now design competitive and well-structured optional income replacement coverages can address concerns about incomplete coverage for some traffic injuries. It will allow consumers at the time of renewal or issuance of their auto insurance policy to elect to purchase additional amounts of coverage to ensure compensation for the entirety of their provable income losses.

16. The Committee concluded that those optional products should be subject to reasonable oversight by an independent traffic accident regulatory body to ensure fairness to consumers from pricing and coverage perspectives.

17. The Committee concluded that under a reformed pure no-fault model, insurers should continue to be subject to oversight delivered by independent regulators with necessary subject matter expertise as regards all aspects of mandatory automobile insurance in Alberta.

## Evidence-informed health treatment for traffic injured

18. The Committee concluded the service providers favour immediate and better health treatment for traffic injured. Other than legal service providers, most participants supported the view that removing or reducing the tort component would lessen the strain of litigation demands on medical and health professionals whose main professional purpose was treating traffic injured.

19. The Committee concluded that under a pure no-fault model there were many opportunities to optimize health treatment for traffic injured. These many opportunities are specifically listed below in our Recommendations.

20. The Committee concluded that competent health service providers working collaboratively with the private insurers will have on the whole the relevant insight to respond to the requirements of fundamental reform. This is so even weighing that the reform will require transformative changes to health services delivery to traffic injured and more comprehensible and responsive oversight and regulation of insurers as regards, their claims, compensation and rating practices.

21. The Committee concluded that there will be a sufficient appetite among competent health providers and insurers to collaborate in the design and delivery of a fundamental reform of the accident compensation model to eliminate adversarial conduct and unnecessary commercial operations currently existing between the traffic injured and the administrative health delivery and compensation services they require.

## Reforms to the assessment of injury and pecuniary loss process

22. The Committee concluded from the submissions of many service providers that there is a superior alternative to a tort compensation model. Almost all agreed that to be an effective alternative to the current model, the alternative regulatory injury evaluation and compensation regime must exclude conflict, disputation and adversarial features that increase cost, delay and added stresses to the injured claimant, the system and the service providers that desire to expedite optimal recovery and rehabilitation outcomes for traffic injured.

23. The Committee concluded that the market preparedness to offer a complete suite of optional products to provide first-party coverage of those losses previously addressed under the tort model would satisfactorily fill any gaps for any traffic injured not fully made whole by the benefits provided in a reformed pure no-fault compensation model.

24. The Committee concluded that a composition of a series of mandatory benefits made available to all traffic injured under a mandatory policy supplemented by a series of optional enriched benefit that a consumer may choose or decline is the superior version of a choice model for motorists and traffic injured.

25. The Committee concluded that there should be a fully redesigned traffic injury regulatory body populated by independent subject matter experts to establish and maintain optimal health treatment and delivery of services for all traffic injured, for early and appropriate claims assessment.

26. The Committee concluded that in the transition period, the Government of Alberta may wish to establish regulations to limit fees for services for all such litigation support providers, including lawyers, court experts, and mediators to appropriate and transparent levels for so long as any tort component is retained in the accident compensation system.

# E. Recommendations

## Property damage product reform

1. The Committee recommends that the property damage component of the auto insurance compensation system be converted to a no-fault model known as Direct Compensation Property Damage (DCPD) under which the insured motorists' insurers will process the costs of repair directly in any event of fault. A driver who caused the collision will continue to be found responsible for the purpose of assessing appropriate rate adjustment.

2. The Committee recommends oversight of this program should be reposed under the AIRB, or as it may be reconstituted under a reform model. Implementation of this reform should be subject to transitional legislative change provisions to allow for orderly resolution of existing claims, including those under the *Motor Vehicle Accident Claims Act*.

## Reforms to address risky driving behavior

3. The Government of Alberta should legislate increased penalties to punish and deter all types of risky driving behaviour.

4. The Government of Alberta should help enhance data collection of accident statistics to inform an education program to promote traffic safety. As well, all service providers should assist the government in:

   a. collecting relevant collision data about traffic collisions including by use of technological and other innovations;
   b. participating in providing more and consistent education about the dangers of and penal consequences for risky driving behavior;
   c. modifying the graduated licencing program to be principle-based and more affordable for new drivers; and
   d. developing consistent and informative education programs for consumers to foster a greater understanding of automobile insurance issues.

## Reform of the Regulatory Process

5. The Committee recommends that the AIRB, or as it may be reconstituted to enlarge its mandate, determine and advise GOA whether the goals of auto insurance regulation would be better served by:

   a. retaining the prior approval model or converting to a file and use model with a designed set of principles;
   b. establishing a practice of publishing guidelines to apprise insurers of what information is appropriate to include in rating applications relative to risk assessment;
   c. evaluating, eliminating or replacing the "all comers rule" and the Grid;
   d. exploring reverting to previous Facility Association ceding arrangements and overseeing its premiums to ensure adherence to social policy considerations and actuarial evidence;
   e. revising, expanding or eliminating the current territories designation;
   f. publishing and disallowing use of only those rating factors that are prohibited;
   g. establishing and enforcing remedies for non-compliance with those guidelines;
   h. preserving a voice for a delegate of the Superintendent of Insurance in the rate approval process;
   i. consultation with its counterparts in other provinces, the Facility Association and auto insurers who carry on business in Alberta, to investigate whether to replace or maintain the all comers' rule and the Grid or devise an alternate mechanism that will be optimally responsive to market conditions as they evolve from time to time, and has regard to the following guiding principles:
      i. The premium charged to all motorists, including new entrants, fairly represents their risks;
      ii. The alternative solution must be transparent, easy to understand, administratively viable and sustainable;
      iii. The alternative solution must strive to minimize cross-subsidization within the reasonable limits of an insurance system;
      iv. the mechanism must ensure that no consumers are subject to unfair market practices;
      v. the alternative solution must be flexible and adaptable to technological advances; and
      vi. the alternative solution must be reviewed periodically to ensure it continually responds to needs of consumers.

6. Either the AIRB or a newly established Traffic Regulator should investigate provision for coverage for claims by pedestrians and cyclists not otherwise covered by auto insurance.

## *Judgment Interest Act*

7. The Committee recommends the GOA amend the *Judgment Interest Act* to make the rate for non-pecuniary damages the same as the rate for pecuniary claims and to suspend claims for judgment interest on non-pecuniary damages for the two year period from the date of loss.

## Optional property insurance products

**User-Based Insurance**

8. The Committee recommends that the AIRB, either as it presently exists or reconstituted to enlarge its mandate, should have exclusive authority:

   a. to collect more data about the potential costs and benefits of UBI;
   b. to determine whether expanding the areas of its current use would be fair to consumers and insurers;
   c. to determine what restrictions or guidelines should be implemented;
   d. to determine what information and education should be distributed and provided to motorists; and
   e. to determine what recommendations should be made to GOA to reform regulations pertaining to the same.

## Legislation to mandate use of winter tires

9. The Committee recommends the Government of Alberta enact legislation to make mandatory use of winter tires for motor vehicles for some specified period between October and March of each winter season.

## Section B benefits

10. The Committee recommends that the current component of no-fault Section B benefits be replaced by a pure no-fault model to provide appropriate insurance coverage to all traffic injured regardless of fault. The Committee recommends that the AIRB, either as it presently exists or reconstituted to enlarge its mandate, should have co-extensive authority to monitor and oversee the array of optional insurance products offered by insurers to supplement the health benefits provided to Alberta motorists under the reform from a pricing and consumer fairness perspective.

## Evidence-informed health treatment for traffic injured

11. The Committee recommends removing the tort component to lessen the strain of litigation demands on medical and health professionals whose main professional purpose was treating traffic injured and replacement with a pure no-fault model under which enhanced care programs should be developed for all categories of injuries including psychological, chronic pain, and combinations and clusters of accident injuries.

12. The Committee recommends a fundamental reform to the delivery of health care to all traffic injured under a pure no-fault model to include as far as possible the following features:

   a. supporting early, active, and appropriate evidence-based treatment aligned with and for traffic injuries;

b. pre-approved treatment frameworks for common injuries based on evidence-informed care with associated schedules and policy limits;

c. expedited access to care from prescribed providers;

d. reducing transactional administrative burdens in the system;

e. reducing duplication of services and overutilization;

f. optimize appropriate treatment modalities with consistent quality improvement to achieve recovery timeframe of 2 to 3 years for most injuries;

g. codifying causation so that there can be reasonable finality of injury claims and proper evaluation of the injuries caused or contributed to by the traffic accident as distinct from other causes; and

h. establishing

   i. definitions of serious and catastrophic injuries;

   ii. definitions of chronic pain and psychological injuries;

   iii. expert medical panels to make conclusive determinations as to which claimants fall into which categories;

   iv. treatment regimes that will include an intended resolution date for the claimant and the service providers;

   v. an independent oversight body to supervise treatment providers to ensure that health providers are following evidence-informed guidelines in regimens to ensure optimal recoveries for traffic injured;

   vi. a structured review process for traffic injured who are not recovering within the normal treatment guidelines or whose recovery has plateaued so that they can be referred for alternative treatment;

   vii. clear return to work guidelines for claimants seeking disability payments to encourage gradual return to work programs, modified duties or retraining for different occupations;

   viii. regulation of fees for health and dental health providers;

   ix. means of collecting and aggregating health treatment data to ensure ongoing monitoring and evaluation of care programs, outcomes and continuous improvement of first-party compensation based on reliable data; and

   x. implementation of an electronic system for auto insurers in conjunction with a traffic injury regulator, health care and ancillary service providers to expedite transmission and processing of claim forms.

13. The Committee recommends that the GOA engage a team of competent health providers to collaborate with the regulators and insurers in the design and delivery of a fundamental reform of the accident compensation model to eliminate adversarial conduct and unnecessary commercial operations currently existing between the traffic injured and the administrative health delivery and compensation services they require.

## Reforms to the assessment of injury and pecuniary loss process

14. The Committee recommends replacement of the current model with pure no-fault care model to compensate all traffic injured without the requirement to prove fault of a negligent driver to be overseen and regulated by alternate traffic accident administrative structure, similar to Alberta workers' compensation and other workers' compensation models, which provide individualized assessments by a panel of medical experts and claims assessments by panels of experts. However, in the case of an Alberta traffic accident compensation model, the Committee recommends a model that takes the most effective features of those successful models and designs additional features that address the needs of the array of traffic injured that vary greatly from workers.

15. The Committee recommends the Traffic Accident Regulatory model establish groups of subject matter experts that will serve on panels to provide conclusive and final medical evaluations, conclusive income loss assessments, oversight of health service providers to ensure ongoing education and professional development, and evidence-informed results.

16. The Committee recommends such alternative model select the most highly qualified medical and health experts, and the most highly qualified financial and vocational experts, the most highly qualified educators, all of whom will provide expert advice and will work collaboratively to determine medical impairment and future treatment issues, income calculations, and future care needs. Such collaborations will eliminate the need to prepare written reports for litigation proceedings, promote evidence-informed practices and protocols and hasten incorporating new innovations that can speed up treatment and recovery of traffic injured.

17. The Committee recommends the traffic injury medical regulator establish maximum recovery standards to encourage and enable all participants, including traffic injured, health providers and claims navigators to move collaboratively toward closure of claims at the appropriate recovery milestones. These goals would be optimally delivered by removal or diminution of monetary gain incentives. Where insurers have developed an array of optional pecuniary and non-pecuniary insurance products, those can provide suitable supplements to consumers who desire to purchase the same for additional protection and security.

18. The Committee recommends that where a medical expert panel concludes injury recovery has been attained as far as possible, benefit and income claims are referred to claims assessor panel for final resolution. If optional products are offered by the industry, those coverages may, subject to the Alberta regulators, establish contractual terms for provision of the benefits.

# IX Proposed Reform of the Alberta Auto Insurance Compensation System

In the introduction to this Report, the complexity of the task ahead was described with specific emphasis and identification of the two true stakeholder groups at its heart. It was important to the Committee to ensure it maintained a balanced perspective of the views of various service providers who expressed preferences as to what was best for the true stakeholders but who also had vested commercial interests in the continued existence of their roles in the current system. The Committee was sensitive to the concerns expressed by all who gave their opinions about how broad the recommended changes might be and how negatively their existing roles might be impacted, and accordingly gave all the views expressed serious, respectful consideration and attention.

Before making its final determinations as to conclusions and recommendations, the Committee took into consideration the following:

a. the history of proposed and actual auto insurance compensation reforms elsewhere in Canada and other countries;
b. the history of auto insurance reform in Alberta from 1990 to the present;
c. medical and health studies and evidence of medical and health expert witnesses;
d. applicable Charter law;
e. actuarial evidence and studies of Alberta claims experience;
f. information received during public consultations, including surveys;
g. information gleaned from a health advisory committee; and
h. its own combined experience of several decades in the Alberta automobile insurance compensation system.

The Committee secured statistical information from the Government of Alberta (GOA) indicating that as of July 1, 2019 the population of Alberta was 4,371,316. As of March 2019, there were 3,642,336 motorized vehicle registrations, excluding trailers, off-highway vehicles, and dealer plated vehicles. The total number of licenced drivers in 2019 was 3,229,821.

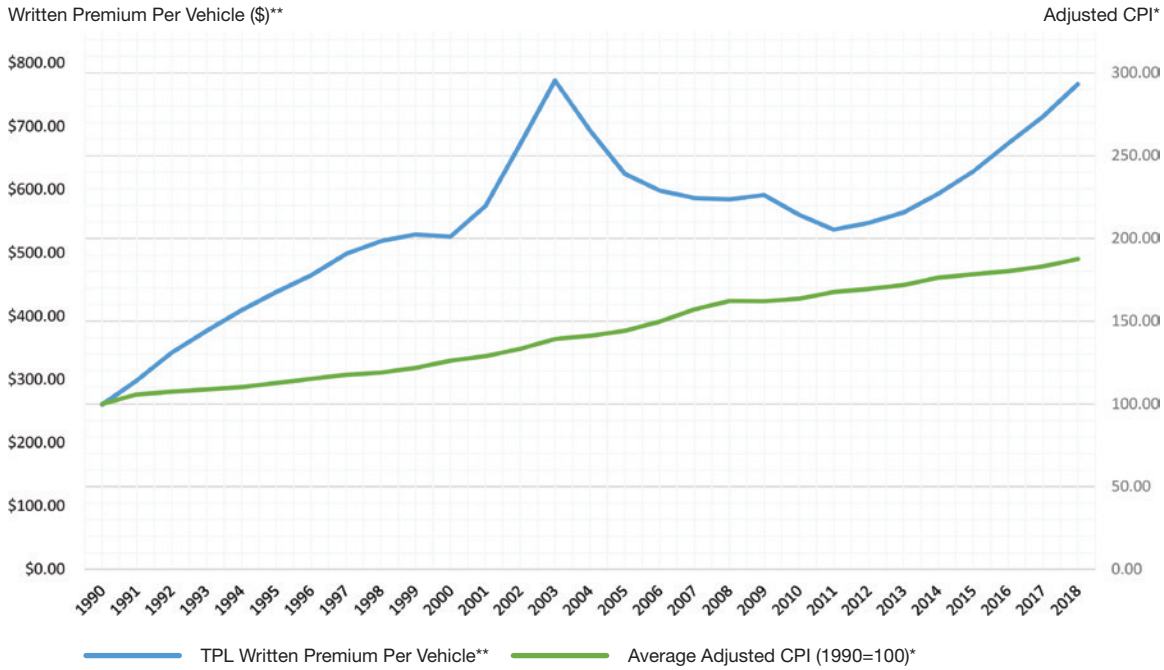
The AIRB confirmed that although there were 69 property and casualty insurers licenced to conduct auto insurance business in Alberta as of 2018, only 46 were active, 10 of which represented 93% of the share of the market.

The AIRB reported that in 2018 the auto insurance industry collected $3,500,000,000 in insurance premiums and paid a total of $3,800,000,000 in claims and operating expenses. In 2018 Albertans made 287,000 claims.

# A. Additional Studies from Consulting Actuary

The Committee also requested two studies from its consulting actuary. The first was a comparison between the increase in written premium for insured vehicles from 1990 to 2018 and the average adjusted Consumer Price Index. A graph displaying this comparison is attached as Appendix 3 and is included below for ease of reference:

### Alberta private passenger third party liability written premium per vehicle




* Source: Statistics Canada. Table 18-10-0004-13 Consumer Price Index, All-Items, Alberta, monthly, percentage change, not seasonally adjusted. CPI is recalibrated assuming AY 1990 is at 100pts.

** Written premium per vehicle adjusted by recalibrated CPI.

This graph confirms other evidence that increases to auto insurance premiums for insured Alberta motorists have continuously exceeded the Consumer Price Index increases for the past 3 decades, and have been sharply escalating since 2014. The Committee has been well satisfied from its analyses that the current Alberta auto insurance compensation model does not delivery stability of premiums or long-term sustainability.

The second study requested from its consulting actuary was an estimation of the transaction costs of private passenger motor vehicle litigation in Alberta expressed in 2018 dollars. The full report is attached as an Appendix 4. For ease of reference, the table showing distribution of transaction costs by item at page 11 of the report is reproduced below:

### Transaction Costs of Injury Litigation

| 2018 Dollars | ($) | (%) |
|---|---|---|
| Disbursements | 28,336,011 | 7.4% |
| Insurer's Outside Counsel Fees | 45,909,850 | 12.0% |
| Insurer's In-house Counsel Fees | 5,390,239 | 1.4% |
| Independent Adjuster Fees | 10,529,663 | 2.8% |
| Insurer's In-house Adjuster Fees | 1,257,881 | 0.3% |
| Defence Medical Reports | 5,468,795 | 1.4% |
| Other Expert Fees | 7,108,317 | 1.9% |
| Other Claim Expenses | 2,467,601 | 0.6% |
| Estimated Claimants' Lawyers Contingency Fees | 276,165,554 | 72.2% |
| **Estimated 2018 Total Transactional Costs** | **382,633,911** | **100.0%** |

Our review of auto insurance reform from many angles reveals the complexity of the auto insurance compensation system. As a result, there are many views about how it should be corrected and improved. The Committee has taken into consideration all the views expressed as well as its own experience in the practical operation of claims practices, tort litigation including from the perspective of plaintiffs and defendants, health treatment, supply of the insurance product, and problems of availability, affordability and sustainability of the injury compensation system.

Nevertheless, the history of auto insurance reform shows there will always be differences of opinion and usually public controversy which heightens the concerns of all consumers and service providers about changes that will diminish their entitlements.

It is thus always the Legislature whose responsibility it is to take informed decisions about how scarce resources must be reallocated by selecting a wise blend of choices and trade-offs for the best interests of all its constituents. The Committee has made its best objective efforts to provide the GOA with its conclusions after analysis of all the relevant considerations.

It was evident from our study that there are serious systemic problems in the current Alberta model. These are exacerbated by entrenched practices and processes that have not kept pace with the health needs of the traffic injured but have in fact prevented or delayed the implementation of modern innovations to improve health outcomes for the traffic injured and to prevent worsening of traffic injuries due to delays in claims resolution.

The increased transaction costs resulting from the tort components are clearly correlated with some of the premium increases. The above shown table clearly depicts the cost pressures the current tort system imposes on the premiums, most notably, legal fees. Reduction or elimination of the legal counsel and plaintiff lawyer contingency fees, expert fees and reports would have reduced costs in the range of $340,000,000 in 2018.

The Committee considers the small number of active auto insurance carriers conducting business in Alberta is a risk to the goals of affordability and accessibility to auto insurance. Improving conditions to increase competition, market innovation and expanded optional insurance products would be beneficial to the traffic injured and insured motorists in the way of allowing consumers to choose specific insurance products that are more tailored to their particular needs, which would protect them more appropriately in the event of traffic injury and loss and produce reduced premiums for those insured motorists who decline the additional optional products.

## B. Health Outcomes for traffic injured Sub-optimal under the Current Model

The Committee found that health treatment for the majority of traffic injured is not delivered consistently or in an evidence informed manner contrary to the best interests of early and effective recovery. This is not the fault of hard-working health professionals. It is the result of the defects in the current system that do not serve the traffic injured and do not serve the health professionals.

A large part of that deficiency is due to the characteristics of the tort system which have historically resulted in delays in claims resolution, duplication of costs and services, undercompensating of those who are catastrophically injured and overcompensating those who are not. This is not the fault of the members of the legal profession or the judiciary. However, it is the result of serious and worsening defects in the current system that history has shown cannot be improved in a gradual continuous fashion but can be meaningfully addressed only by fundamental reform.

The Committee is satisfied that all Albertans, including those who do not form part of the insured motoring public, will be better served if the automobile insurance system provides at least a modicum of evidence-informed medical and health treatment to help all traffic injured receive prompt and appropriate medical and health treatment, participate optimally in their own recovery and see an expedited return to normal life activities including employment and leisure.

## C. Compensation of All Traffic Injured Sub-Optimal under Current Model

First, those traffic injured who are currently excluded from the auto compensation system or whose health benefits were restricted because their injuries were not provably due to a negligent driver are in the result not monitored to ensure receipt of the most effective health treatment for their injuries. Their ongoing health problems are redirected to the health system or social agencies which result in a greater financial burden to all Alberta taxpayers.

Second, those persons may have sustained injuries due to circumstances that could happen to anyone. As examples, the following Alberta traffic injured cannot obtain maximum recovery under the current tort model:

a. injuries sustained due to the collision with an animal on the highway;
b. injuries sustained in accidents due to extremely icy highways and road, whiteout, smoke or fog conditions reducing visibility to nil; and
c. injuries due to an unidentified driver or a driver who was not legally at fault for the collision.

It is noted that even for traffic injured who have a right of action, court or settlement awards for the catastrophically injured are not always fully paid because the amount of the award exceeds the insurance policy limits of the motorist whose conduct caused the accident.

Third, the two principal rationales for maintaining a tort model in automobile insurance compensation, subject to debate since mandatory insurance was introduced to the system, have become even more seriously weakened over the last three decades in Alberta due to changing social, economic and commercial conditions.

## D. Failure of Auto Insurance Reform by Piecemeal Increments to Deliver Long-term Stability

Failure to promote the early and effective recovery or resolution of claims of traffic injured to the detriment of their health outcomes has been also verified by health professionals in the Alberta auto insurance compensation system.

The *Minor Injury Regulation* (MIR) and the *Diagnostic Treatment and Protocols Regulation* (DTPR) were initially met with criticism, opposition and objection from many service providers. As a result, there was probably additional uncertainty, confusion and anxiety about whether and the extent to which important rights were being taken away in the name of cost reductions. Those reforms were put into effect in 2004 but, until the Court of Appeal decision issued in 2009, it was not clear to the service providers, traffic injured or motoring public whether those reforms constituted valid law.

The MIR and DTPR, in the first phases of operation, initially proved to be a satisfactory and, some would argue, a superior model for delivering health benefits and outcomes to traffic injured sustaining certain types of temporary soft tissue injuries. Those reform benefits likely also reduced some costs which enured to the benefit of all members of the motoring public.

However, there has been continuing disagreement among service providers since 2009 about what injury cases should be covered or excluded from the MIR and the DTPR. This uncertainty produced continuing litigation over the interpretation of the regulations which was an unintended consequence. One insurer reported to the Committee that its soft tissue injury claims that lasted longer than 6 months increased over the last 5 years by 700%. The growing divergence between the intent and the result of the 2004 reforms is detrimental to the traffic injured and the motoring public, as is ongoing uncertainty flowing therefrom.

It is detrimental to the traffic injured as a group because they cannot be sure whether a new court decision might result in a determination that their case has cleared the MIR cap and in turn allows the pursuit of increased monetary compensation in their cases. When a new court decision from time to time produces such results, it would reasonably leave traffic injured whose cases were settled before the decision wondering if they were insufficiently compensated.

The GOA endeavored to clarify the uncertainty resulting from court decision in 2012 by enacting additional measures in late 2017 and 2018. Despite its best legislative efforts, continuing calls for adjustment due to concerns over unaffordability, unavailability and unsustainability combined to add to the ample evidence in Alberta or in other private enterprise auto insurance models elsewhere that gradual and piecemeal tort reform has not succeeded and will not in future succeed in delivering a viable and sustainable insurance system, or significantly reduced or eliminated costs from the system.

As a result, while the Committee agreed that individual evaluation of each injured person's injuries and losses is an important goal to preserve in any reformed auto insurance compensation system, based on all the evidence, research, studies, viewpoints and, its own experience with the existing model, it was satisfied that an alternative administrative health delivery model outside the tort system can provide individual evaluation of each injured person's injuries and losses, and can do so more effectively, more swiftly and with superior health outcomes for traffic injured than the current model.

## E. The Tort Principle of Deterrence Does not Deliver Intended Goal

The argument that a fault-based tort system must be maintained to deter motorists from risky driving conduct, again always subject to debate, has over time also become increasingly irrelevant. The original practical consequence under the tort system was that when a motorist was sued for damages for negligence causing injury, that person was frequently informed shortly after the accident that an injury had been alleged, and there would be an investigation and possibly a lawsuit, naming that motorist as a defendant. A lawsuit would determine the motorist's liability for alleged faulty driving conduct and the amount of damages payable to the injured person.

The motorist defendant might be required to participate in pre-trial and trial proceedings. The injured person would also give evidence about the injuries and losses. Such trials were open to the public. The evidence and the verdict might later be reported in the print media.

These consequences of the event could be seen to deliver specific deterrence to the individual driver and general deterrence to members of the public. But over the decades these consequences have disappeared from the current system.

Instead, when a motorist is involved in a minor collision with another motorist, now especially if it initially appeared due to a momentary and inadvertent driving error, there may be no indication that any injury resulted. After reporting the incident to the insurer, the motorist often hears nothing until well over two years later, because an injured claimant is not required to formally commence a lawsuit until within two years of the date of loss and has another year after that to serve notice of the lawsuit on the alleged at-fault motorist.

Some motorists in these circumstances never learn when the claim was finally settled or for what amount. As confirmed by all litigation service providers, such actions rarely proceed to trial. If the claim is settled before a trial, the results are not reported to the public. Moreover, not all trial decisions are publicized in news outlets or law reports. Even at conclusion of the claim, the motorist is not called upon to contribute financially to the amount of the assessed losses. In the result, the motorist who caused the accident does not normally experience an immediate cause and effect from the negligent driving on the day of the loss to the date of resolution.

This example is similar to many auto insurance cases in the current tort system. It demonstrates that practically, the intended effect of the principle of deterrence has lost its efficacy and the principle of deterrence is no longer a convincing justification for maintaining the tort system in auto insurance. The Committee concluded that deterrence of risky driving is more effectively achieved with increased enforcement of traffic laws, increased penalties for traffic infractions, more extensive education about the consequences of risky driving and the pricing mechanism that requires reckless drivers to pay higher premiums for insurance, if they are not precluded altogether from driving due to traffic enforcement laws.

## F. The Tort Principle of Quantifying Damages on an Individual Basis Subject to Increasing Costs and Delays

The next principle tort proponents advance for maintaining tort is the need to ensure individual evaluation of each injured person's injuries and losses. However effective delivery of this goal has also departed widely from its original intent.

First, no service providers dispute that only a very small percentage of lawsuits launched to determine the true measure of damages in an individual case proceed to trial and determination by an impartial jurist after receipt of all the evidence in an open court.

Second, it is not disputed that only a small percentage of cases are resolved after an informal opinion is secured from a Queen's Bench trial judge in a judicial dispute resolution (JDR) process.

Third, it is common ground that there is much delay in scheduling dates for both these court processes due to overburdening of the resources in the court system.

The remaining claims advanced by traffic injured, if legal counsel is retained, are resolved by negotiating settlements by representatives of the parties rather than by an objective and impartial judicial determination of the proper measure of damages in each case.

As described in much detail in the *Marshall report*, additional concerning collateral deficiencies are resulting from the negotiation processes in injury claims, which are costly in terms of time, resources, and expenses, and which diminish the amounts of benefits and settlements ultimately delivered to the traffic injured.

As also described in much detail in the *Marshall report*, all of the foregoing circumstances are having a further important adverse effect of delaying recovery of traffic injuries and in some instances, exacerbating the extent of the pain and suffering of the injured person.

## G. Lump Sum Payments for Pain and Suffering subject to misuse and abuse

Service providers including those in the legal community agreed that in the example of a claimant negotiating a lump sum payment in lieu of the established and accepted health benefits, it was undesirable to have the unintended consequence of the injured person paying a portion of his benefits to his legal advisor and then redirecting the balance of his lump sum payments to other unrelated purposes. This produced the result that the injuries remained and required further health treatment that would then have to be paid for by the Alberta taxpayers.

From the Committee's perspective, concern over this admitted, undesired consequence has equal application to all traffic injured, including those with more complicated and serious ongoing chronic pain, psychological consequences, jaw joint and concussion, or clusters of injuries, as well as the catastrophically injured.

The legal community, no matter how competent and careful, cannot ensure that any traffic injured person at any level of severity of injury, at the resolution of a lawsuit will responsibly preserve their remaining settlement funds and apply them appropriately to future care or loss of income.

The Committee further considers that an enhanced and enriched version of the originally designed DTPR will provide meaningful reduction and elimination of pain and suffering and loss of enjoyment of life, by way of improved and expedited health outcomes. Finally, it considers that the commitment of the insurance industry to offer additional optional insurance policies to those consumers who wish to purchase that protection will provide a reasonable replacement for the withdrawal of those benefits.

## H. Need to extend and expand principles of DTPR to all non-catastrophic traffic injured

The members of the medical and health community and certain other service providers reported that the original intent of the *MIR* was for medical and health assessments of Certified Examiners (CEs) to be conclusive so that claims could be finalized promptly and decisively. However, over time, disputes by claimants often with legal representation arose over the CE conclusions resulting in some court decisions overruling the CE decisions and in turn, the deference intended to be accorded to those CEs. These consequences resulted in delays in resolution of claims and protracted recoveries.

There were also reports that various health practitioners subsequently failed to consistently follow the protocols, since there was no process to oversee, supervise and enforce compliance. This lack of compliance also weakened the original intent of the DTPR.

It was also identified that often skilled health practitioners declined treatment to patients who reported they were engaging in litigation, due to the subsequent requirement to be involved as a duelling expert.

The long delays endemic in tort litigation could be corrected by substitution of medical review panels established under an administrative model to have the authority to make conclusive determination at appropriate milestones after an accident as to issues of medical impairment and future treatment requirements.

The requirement for duelling doctors to be engaged by both sides in litigation to expend large amounts of time, resources and expense to craft written reports and prepare for possible cross-examination on their credentials and credibility is counterproductive. Instead doctors should be enabled to lead the inquiry, collaborate in a non-controversial, non-adversarial environment, and take factors into consideration that in a legal environment may have been excluded for procedural reasons. This will produce a more comprehensible and speedier resolution, to the benefit all participants and will permit final conclusions about the health condition of traffic injured much earlier than typically occurs in the litigation process.

As regards the reported problems of non-compliance by service providers under the DTPR, the original design of the DTPR remains sound and provided there were regulatory processes established to address the non-compliance and the weakening of the original intent, the DTPR could continue to serve the traffic injured in Alberta well in future. The Committee concluded that the DTPR should be further developed and expanded in its design to deal with all other injuries.

The development and extension of the existing DTPR under a properly designed regulatory process will address the problems of some traffic injured in Alberta receiving inadequate, wrong or duplicative treatment that does not benefit their recovery. Such additional treatment protocols when reviewed, refined, and enforced in line with current evidence-informed practices will establish greater uniformity of treatment, will allow for greater relevant data collection and feedback to inform and track recovery methods that are safe and effective.

## I. The Tort model requires replacement by a Pure No-fault Model

The Committee concluded that the Alberta tort system has lost the ability to best serve the traffic injured and motoring public. Alternative pure no-fault models have rebalanced the goals of a traffic compensation resulting in fair, accessible and affordable insurance, timely and appropriate outcomes when claims are made, and viable and sustainable automobile insurance systems. With modernized assessment and treatment protocols for all traffic injured, a pure no-fault model will produce greater opportunities to deliver improved health and benefits.

Improved health benefits delivered to all traffic injured will benefit families and dependants of the traffic injured as well as the motoring public and Alberta taxpayers. Better health outcomes would likely reduce the duration of recovery times, which in turn would result in earlier return to work and life activities and lower the nature and amounts of claims for pecuniary losses.

A redesigned pure no-fault accident compensation model will enable and incentivize health providers to develop consistent assessment and treatment protocols and collect patient feedback and objective treatment data to continue to inform those protocols. In the result the redesign will produce opportunities to deliver superior health outcomes for traffic injured and without the delays, duplications in services, adversarial processes and costs that exist under the current model.

Such reallocation of resources under a pure no-fault model will also reduce and eliminate current costs in the system that benefit neither of these true stakeholder groups, in amounts that would exceed a range of $340 million annually.

## J. Need for No-Fault Care and Compensation Model for All Catastrophically Injured

Despite careful consideration, the Committee ultimately rejected the suggestion that the tort model should be retained for the catastrophically injured who could prove fault of a negligent driver. If weakness of the tort components do not serve the traffic injured under the existing model due to delay in treatment, delay in receipt of benefits and delay in assessment of their income losses and cost of care needs, there is no logical justification for leaving the catastrophically injured out of the plan to reform receipt of the optimal benefits of the health care program for traffic injured.

The catastrophically injured group, more than any other, requires and deserves prompt expert medical and rehabilitation evaluation of the extent of injuries, optimal care and health benefits, long-term care and loss of income needs and prompt provision of those services, without the need to endure conflict over their entitlement. Moreover, the statistics presented to the Committee showed that the frequency of catastrophic injuries had decreased.

The primary purpose of a reformed automobile compensation system should be the optimal proper medical and health treatment of traffic injured, based on:

a. Evidence-informed practices, consistently evaluated;
b. improved treatment modalities;
c. established and continually improved from reliable data collection and analysis derived from modernized information technology; and
d. application and reliable feedback from traffic injured and health providers.

It is in the best interest of all Albertans, including those tax payers who pay for the health care system and social service agencies, that the optimal medical and health treatment proposed for the fundamental reform also should be available most especially, to all catastrophically traffic injured Albertans.

The design of a health care model that provides appropriate medical evaluation, assessment and treatment modalities for all of those traffic injured who may have permanent incapacity and long-term care needs before recovery or resolution as far as medically possible is a complex task. It is better addressed by transforming the health care model so that medical, health and vocational expertise currently utilized in the tort system can be redirected to an administrative model that eliminates the features of adversity, conflict and dispute for better efficiency and cost.

The Committee has considered features of the proven long-term care model implemented in 2007 in New South Wales that could be applied in the Alberta traffic context.

The Committee recognizes that in a private sector delivery model for automobile insurance, there is one claims resolution concern in providing in a new in a pure no-fault model properly calculated long-term care and compensation to the sector of traffic injured that have permanent catastrophic injuries and will never return to a pre-accident condition. That is because the insurer's obligation may extend indefinitely into the future.

Despite that obstacle, the Committee foresees that there would otherwise be added benefits of having the private enterprise system partner in the pursuit of excellence in managing long-term care for catastrophically injured.

The Committee considers that one viable solution to that obstacle is to develop for the long-term catastrophic injury care program a pool developed and funded by the property casualty industry through collection and delivery of a certain earmarked portion of each auto insurance policy. The Facility Association is an example of such an effective pool as was suggested in the *Osborne report* if such a catastrophic fund was to be created.

The Committee would foresee the management of the catastrophic injury fund by the independent Facility Association type entity, to ensure timely collection, and most prudent investment of the pool funds, pending requests for distribution by the Traffic Injury Regulator for the purposes of the long-term care program. Once the insurer had provided proper transfer of the funds earmarked for the pool, it could conclude and close its claims file.

In the view of the Committee, this proposed mechanism could provide a balanced approach to satisfy the industry, the catastrophically injured, the long-term care rehabilitation and vocational care community, and the Alberta motoring public.

In summary, a catastrophic injury long-term care program, as described in Section X of this Report, would be better suited for all Alberta traffic injured and the motoring public but would before implementation require consultation with insurance industry experts, and long-term care and rehabilitation health experts as to the optimal design and operation.

## K. Delivery of goals listed in Mandate by Pure No-Fault Compensation Model

The Committee proposes replacement of the current model with a pure no-fault model characterized by the following central features:

a. implementation of an administrative traffic accident regulatory structure to replace the court for assessment of extent of injuries and pecuniary losses to traffic injured;
b. individual assessment of injuries, extent of recovery or impairment, and requisite future treatment to be conclusively determined by expert medical review panel within 2 years from the accident date for most cases and within 3 years of all remaining cases;
c. defined rehabilitation and care benefits and in the case of the most seriously injured, impairment benefits will replace lump sum payments for pain and suffering and loss of enjoyment of life; and
d. individual assessment of economic losses and future care entitlements to be conclusively determined by financial, vocational and rehabilitation expert review panel within 2 years from the accident date for most cases and within 3 years of all remaining cases.

## L. Administrative Traffic Accident Regulatory Structure to replace the Court Assessment of Extent of Injuries and Pecuniary Losses

Replacing the tort system, including the traditional rules of the court system with a pure no-fault model, will require a new regulatory framework designed and committed to oversee the proper treatment of traffic injured in the claims process, including health services to address recovery, rehabilitation or ongoing care, and evaluation of medical and financial status for purposes of determining appropriate financial benefits to restore losses due to injury.

The Committee recommends the establishment of a board and tribunal, sometimes described in this Report as the Traffic Accident Regulator, to be funded primarily by insurers but led by a statute appointed independent administrator, to oversee all operations and act as the authority of last appeal. It would:

a. serve as regulatory accident compensation tribunal for oversight of claims processes to ensure fair determination and provision of claimants' health and financial entitlement to benefits;
b. serve as regulatory accident compensation tribunal for oversight of health and medical treatment, assessment and evaluation of permanent injury to ensure fair determination and provision of claimants' entitlement to health benefits;

c. serve as regulatory accident compensation tribunal for oversight of claims assessment panels to ensure fair determination and provision of claimants' financial entitlement to benefits and compensation;
d. establish liaison and exchange of relevant information with the Traffic Insurance Regulator; and
e. be structured in a manner similar to the current Alberta Workers' Compensation Board model although led by a statute appointed leader to ensure independence.

The Committee recommends that the Traffic Accident Regulator establish several administrative arms to oversee specific aspects of the pure no-fault accident compensation system.

One specific arm is described in this Report as the Traffic Claims Regulator and would be responsible for:

a. a standardized claims process for traffic injured to present claims for health treatment and monetary compensation;
b. a claim support service to provide comprehensive services for an end to end claims process and pathway;
c. a process for overseeing delivery of services by providers; and
d. processes for establishing qualifications and certifications of those who will be engaged in the provision of services for traffic injured.

Another specific arm is described in this Report as the Traffic Injury Regulator and would be responsible for:

a. a comprehensive process of individual assessments of accident losses for traffic injured including diagnosis, evaluation of appropriate health treatment, benefits and finalized impairment determination;
b. a comprehensive medical assessment process structured with panels whose decisions are conclusive evidence as to the degree of permanent impairment of the injured person, subject to a defined review and appeal process;
c. establishing a roster of panellists with appropriate training, qualifications, knowledge, experience and personal skills to evaluate and determine issues to be heard by medical and claims assessment panels; and
d. establishing a defined review and appeal process from the panel decisions.

Another specific arm is described in this Report as the Traffic Claims Assessment Regulator and would be responsible for:

a. a comprehensive claims assessment process structured with panels whose decisions are conclusive evidence as to entitlement to monetary payments for future care and income replacement claims; and
b. establishing a roster of panellists with appropriate training, qualifications, knowledge, experience and personal skills to evaluate and determine quantum of financial claims and benefits for traffic injured based on certificates issued by the Traffic Injury Regulator.

Another specific arm is described in this Report as the Traffic Insurance Rate Regulator and would be responsible for:

a. the duties of the existing Automobile Insurance Rate Board; and
b. any expanded duties delegated to it as it is reconstituted under the pure no-fault model.

The insurers carrying on business in Alberta will be underwriting a portion of the administrative costs of the new model. Many health professionals will be recruited to deliver the health services under a new health care model. The GOA will be responsible for legislation and periodic revision of regulations governing this model. To ensure optimal participation, exchange of information, feedback and contributions for continuous improvement, in service of the traffic injured and the motoring public, there must be sufficient representation of all of these views to, or at, the board.

## M. Individual Assessment of Injuries and Treatment by review panel of medical and health experts within 2-3 years from the accident date

The details of the reforms are further described in Section X of this Report.

## N. Defined Rehabilitation, Care or Impairment Benefits for most seriously injured

The pure no-fault care model will deliver, in place of awards for pain and suffering and loss of enjoyment of life, a set of defined rehabilitation or impairment benefits for various injured categories to improve recovery and health outcomes in the short, medium and long term and are more fully detailed in Section X of this Report.

### Improved Health Outcomes

A pure no-fault model would put to an end the ongoing uncertainty about what treatment and compensation should be afforded to what category of injury. The Committee proposes a pure no-fault reform model that will be more transparent and more comprehensible to traffic injured and motorists.

A pure no-fault auto insurance compensation model will promote innovation and encouragement of optimal health treatment for Alberta traffic injured in an environment devoid of legislated adversarial conduct. Traffic injured, like all persons who suffer ill health, are better served if all their service providers are pulling in the same direction. This collaborative approach induces the injured to also take an active participatory role in their own recovery.

One example that demonstrates the value of a pure no-fault model is the case of Québec which, shortly after its model was put into place, was able to develop categories of soft tissue injury treatment now adopted worldwide, namely the Whiplash Affected Disorder I, II and III.

### Improved Environment for Health Service Providers

Transferring the Alberta traffic injury compensation to an administrative body that oversees individual assessment of all traffic injured and provides evidence-informed treatment individually will also provide a healthy environment for its health services providers.

A pure no-fault model will reduce or eliminate delays in resolution of injury claims that attend the tort system, and the negative impact on health outcomes of traffic injured due to intervention of clusters of service providers into the medical treatment regimen for traffic injured.

The Committee expects that a new continuum of care model for all traffic injured will induce return to the health professional service providers who declined to treat traffic injured who presented as litigants and will elevate the quality and consistency of treatment in an environment characterized by mutual collaboration.

The numbers of medical appointments arranged for traffic injured will be reduced and will be based on effective evidence-informed health results.

## O. Individual Assessment of Economic Losses and Future Care Entitlements by review panel of financial, vocational and rehabilitation experts within 2-3 years from the accident date

The Committee's reasoning behind substituting medical expert panels for the duelling experts of the tort model applies with equal force to financial, vocational and rehabilitation experts. It would eliminate the adversarial proliferation of economists, accountants and vocational experts, all expending large amounts of time, resources and expense to craft written reports and prepare for possible cross-examination on their credentials and credibility.

Instead, an expert panel would lead the inquiry, collaborate in a non-adversarial environment, and take factors into consideration that in a legal environment might have been excluded for procedural reasons. This transformation will produce a more comprehensible, transparent and speedier resolution to the benefit all participants. It will further permit finalized conclusions about the income and other pecuniary losses of traffic injured much earlier than typically occurs in the litigation process, in most cases within two years from the date of the accident.

The Committee initially contemplated that its proposed pure no-fault reform model provide full reimbursement of all provable pecuniary losses to be conclusively determined by a review panel of subject matter financial experts, supplemented with vocational and rehabilitation experts where the case required.

However, after examining alternative pure no-fault compensation models including those in Saskatchewan, Manitoba and Worker's Compensation systems, the Committee recognized that pure no-fault models usually stipulate some standard percentage such as 80% or 90% of full income replacement. The Committee recognized that this feature is likely incorporated in the interest of public policy to promote return to employment. It also noted that this type of calculation is consistent with the rationale and practice of group insurance compensation models.

The Committee also observed that under the current tort model, claimants represented by legal counsel also do not receive full recovery of their income losses due to the deduction of legal fees which may reduce the income recovery to around 70% of the total loss. The Committee recognizes the counterargument that claimants with legal counsel may recover additional amounts due to the skill in proving additional components of financial losses.

Nevertheless, the transformed pure no-fault panel of economic and financial experts will better serve the traffic injured and motoring public by producing dispositions of pecuniary claims based on established economic considerations and will be capable of modification and adjustment based on the ongoing review and consideration of prevailing economic conditions applicable to the injury claimants.

The costing of the pure no-fault compensation model together with three variations is contained in Section XII of this Report.

## Elimination and Reduction of Costs

In addition to improving the health benefits of all traffic injured, the proposed pure no-fault model will eliminate numerous costs from the current system, including:

a. costs of subject matter court experts;
b. costs of duplicate assessments by duelling court experts;
c. delays in resolution of litigation cases;
d. service providers declining to serve clients who have elected litigation;
e. legal costs;
f. costs to maintain the court system; and
g. costs to the health system.

In addition to improving the health benefits of all traffic injured, a proposed pure no-fault model will eliminate suboptimal effects of the tort process including;

a. reduction of recovery to the traffic injured by engaging fringe lenders;
b. exaggerated or fraudulent claims to boost monetary recovery; and
c. adverse effects of spending lump sum settlements before injury recovery.

Limitations on monetary awards will eliminate the incentive to traffic injured to prolong, even unconsciously, sickness experience in the pursuit of a financial reward. There will be a rebalancing of compensation among all traffic injured to eliminate overcompensation in some cases and undercompensation in others. For those Albertans who wish to retain the opportunity to purchase insurance coverage for fuller protection of their losses, the insurance industry has committed to deliver optional insurance policies to cover the withdrawal of those benefits.

## P. Legal Challenges to Fundamental Auto Insurance Reform

The Committee very carefully considered warnings that any no-fault reform recommended could be subject to legal Charter challenge. It reviewed comments by the Alberta Court of Appeal (ACA) in *Morrow v Zhang* as regards the authority of the Legislature to cap soft tissue injury claims.

The Committee took particular guidance from the following key points:

a. given that full costs of care are awarded, damages for pain and suffering can be moderated by policy considerations: For example, workers' compensation regimes limit or replace non-pecuniary damages;
b. every injured person is subject to the "cap" that exists by virtue of the limits of the tortfeasor's insurance or his own S.E.F. 44 endorsement;
c. the nature of the interest of traffic injured claimants is not of "fundamental" societal or constitutional importance;
d. the legislation deals with automobile insurance which is private, but highly regulated…;
e. other courts have found a cap or a threshold to be constitutional; and
f. the cap on soft tissue injuries … is not discriminatory because the legislation does not perpetuate the stereotype and it responds to the needs of the claimants.

The Committee observed that the ACA reasons affirm that the Legislature may enact a pure no-fault traffic accident compensation model. It further observed that where the reforms limited the awards available for pain and suffering in place of established assessment and treatment protocols, such legislation would not violate the Charter so long as the reforms are implemented as a package, balanced, interrelated and interdependent.

## Q. Reform will promote long term stability and sustainability

The proposed reform will reduce the frequency of calls to GOA to reform deficiencies in the auto insurance compensation system because the regulatory regime to be put into place will be populated by subject matter experts who can advise how to respond more promptly to changes needed, whether health or medical, income loss calculation, rating practices, property damage repair processes, anti-fraud, traffic safety and the like on an on-going basis.

## R. Further cost savings and improved competition will result from regulatory and property insurance reform processes

There are also similar problems in the regulatory component of the current system which suffer deficiencies for similar reasons as well as overlapping regulatory roles. These are not the fault of the industry members or regulators but are the result of entrenched processes that do not lend themselves to rapid response and continuous review and adjustment for the best interests of the insured motorists.

In the following sections of the Report, the Committee details proposals for a pure no-fault auto insurance compensation model that will properly and adequately treat traffic injuries of all Albertans, and encloses a report of its consulting actuary that details costing of its preferred pure no-fault model, as well as two other models to illustrate the type of projected savings under different variations. A fourth quasi-model displays the potential cost savings during a transition period before implementation.

The Committee recommends that the ultimate details of a reformed pure no-fault auto insurance compensation model should be developed in consultation with selected health and medical experts, and, thereafter, ancillary health service providers.

The Committee recommends that there be consultation with insurance industry experts to determine what modifications are optimally delivered without compromising the reasonable needs of motorists.

The Committee recommends that the most successful and applicable features of the current Alberta Workers' Compensation model in terms of administrative regulatory structure be utilized as a guide in the design and then modified for the traffic accident injury context.

## S. Reforms to benefit the traffic injured require trade-offs to also ensure affordability, accessibility and sustainability of fair premiums

To extend the optimal treatment assessment and benefits to all traffic injured, regardless of the ability to prove fault, there must be reductions and eliminations of the awards, most particularly those associated with pain and suffering claims, available under the current model. This is an example of the necessary trade-off in exchange for more transparent and balanced recalibration of benefits to be reallocated to all Alberta traffic injured and paid by the motoring public through fair, accessible and affordable auto insurance premiums.

## T. Preservation of tort action outside insurance compensation model against motorists found guilty of criminal driving conduct causing bodily injury

Despite its view that the tort insurance model currently does not effectively deliver the goal of deterrence, in the case of motorists convicted of criminal driving offences that caused injuries, the Committee sees merit in the Legislature considering whether to preserve a cause of action for any provable damages not covered under the pure no-fault model, or the optional coverages in place. Such preserved right of action would necessarily be conditioned on the premise that only the convicted motorist would be personally liable to the traffic injured plaintiff for any judgment. In short, there would be no right of action against the motorist's insurer for any amounts under such judgement.

## U. Establishment of an Ombudsperson Office for Consideration of Additional Compensation in Exceptional or Extraordinary Cases

The Committee recommends that the GOA give consideration to the establishment of an ombudsperson or ombudsperson office for which application may be made for additional compensation in exceptional or extraordinary cases. Such an office may serve to identify any cases that do not appropriately fall within one of the categories of injuries, or warrant additional consideration due to extenuating circumstances.

# V. Conclusions

1. Increases to auto insurance premiums for insured Alberta motorists have continuously exceeded Consumer Price Index increases for the past 3 decades, and have been sharply escalating since 2014. The current Alberta auto insurance compensation model does not deliver stability of premiums or long-term sustainability.

2. There are serious systemic problems in the current Alberta model. These are exacerbated by entrenched practices and processes that have not kept pace with the health needs of the traffic injured but have in fact prevented or delayed the introduction of modern innovations to improve health outcomes for the traffic injured and to prevent worsening of traffic injuries due to delays in claims resolution.

3. The Committee concluded that all Albertans, including those who do not form part of the insured motoring public, will be better served if the automobile insurance system provides at least a modicum of evidence-informed medical and health treatment to help all traffic injured receive proper care, participate optimally in their own recovery and see an expedited return to normal life activities including employment and leisure.

4. The Committee concluded that growing divergence between the intent and the result of the 2004 reforms is detrimental to the traffic injured and the motoring public, as is ongoing uncertainty flowing therefrom.

5. The Committee concluded that an alternative administrative health delivery model outside the tort system can provide individual evaluation of each injured person's injuries and losses, and can do so more effectively, more swiftly and with superior health outcomes for traffic injured than the current model.

6. The principle of deterrence is no longer a convincing justification for maintaining the tort system in auto insurance. Deterrence of risky driving is more effectively achieved with increased enforcement of traffic laws, increased penalties for traffic infractions, more extensive education about the consequences of risky driving and the pricing mechanism that requires reckless drivers to pay higher premiums for insurance, if they are not precluded altogether from driving due to traffic enforcement laws.

7. The long delays endemic in tort litigation could be avoided by substitution of medical review panels established under an administrative model. These would have the authority to make conclusive determination at appropriate milestones after an accident as to issues of medical impairment and future treatment requirements.

8. The requirement for duelling doctors to be engaged by both sides in litigation to expend large amounts of time, resources and expense to craft written reports and prepare for possible cross-examination on their credentials and credibility is counterproductive. Instead doctors should be enabled to lead the inquiry, collaborate in a non-controversial, non-adversarial environment, and take factors into consideration that in a legal environment may have been excluded for procedural reasons. This will produce a more comprehensible and speedier resolution, to the benefit of all participants and will permit final conclusions about the health condition of traffic injured much earlier than typically occurs in the litigation process.

9. The original design of the DTPR remains sound and should be further developed, enhanced in its design and extended to deal with all other injuries. The development and extension of the existing DTPR under a properly designed regulatory process will address the problems of some traffic injured in Alberta receiving inadequate, wrong or duplicative treatment that does not benefit their recovery. Such additional treatment protocols when reviewed, refined, and enforced in line with current evidence informed practices will establish greater uniformity of treatment, will allow for greater relevant data collection and feedback to inform and track recovery methods that are safe and effective.

10. The Alberta tort system has lost the ability to best serve the traffic injured and motoring public. A pure no-fault model can rebalance the goals of traffic compensation resulting in fair, accessible and affordable insurance, timely and appropriate outcomes when claims are made viable and sustainable automobile insurance systems with modernized assessment and treatment protocols for all traffic injured. A pure no-fault system will produce greater opportunities to deliver improved health and benefits.

11. Improved health benefits delivered to all traffic injured will benefit families and dependants of the traffic injured as well as the motoring public and Alberta taxpayers. Better health outcomes would likely reduce the duration of recovery times, which in turn would result in earlier return to work and life activities and lower the nature and amounts of claims for pecuniary losses.

12. A redesigned pure no-fault accident compensation model will enable and incentivize health providers to develop consistent assessment and treatment protocols and collect patient feedback and objective treatment data to continue to inform those protocols. In the result the redesign will produce opportunities to deliver superior health outcomes for traffic injured and without the delays, duplications in services, adversarial processes and costs that exist under the current model.

13. The design of a health care model that provides appropriate medical evaluation, assessment and treatment modalities for all of those traffic injured who may have permanent incapacity and long-term care needs is a complex task. It is better addressed by transforming the health care model so that

medical, health and vocational expertise currently utilized in the tort system can be redirected to an administrative model that eliminates the features of adversity, conflict and dispute for better efficiency and cost.

14. A pure no-fault auto insurance compensation model will promote innovation and encouragement of optimal health treatment for Alberta traffic injured in an environment devoid of legislated adversarial conduct. Traffic injured, like all persons who suffer ill health, are better served if all their service providers are pulling in the same direction. This collaborative approach induces the injured to also take an active participatory role in their own recovery.

15. Transferring the Alberta traffic injury compensation to an administrative body that oversees individual assessment of all traffic injured and provides well informed treatment individually will also provide a healthy environment for its health services providers.

# W. Recommendations

1. The Committee recommends the establishment of a board and tribunal, described in this Report as the Traffic Accident Regulator, to oversee all operations and an authority of last appeal which:
   a. serves as regulatory accident compensation tribunal for oversight of claims processes, to ensure fair determination and provision of claimants' health and financial entitlement to benefits;
   b. serves as regulatory accident compensation tribunal for oversight of health and medical treatment, assessment and evaluation of permanent injury to ensure fair determination and provision of claimants' entitlement to health benefits;
   c. serves as regulatory accident compensation tribunal for oversight of claims assessment panels to ensure fair determination and provision of claimants' financial entitlement to benefits and compensation; and
   d. structured in a manner similar to the current Alberta Workers' Compensation Board model although led by a statute appointed leader to ensure independence.

2. The Committee recommends that the Traffic Accident Regulator establish several administrative arms to oversee specific aspects of the pure no-fault accident compensation system as described in Section IX of this Report.

3. The Committee recommends that the ultimate details of a reformed pure no-fault auto insurance compensation model should be developed in consultation with selected health and medical experts, and, thereafter, ancillary health service providers.

4. The Committee recommends that there be consultation with insurance industry experts to determine what modifications are optimally delivered without compromising the reasonable needs of motorists.

5. The Committee recommends that the most successful and applicable features of the current Alberta Workers' Compensation model in terms of administrative regulatory structure be utilized as a guide in the design and then modified for the traffic accident injury context.

6. The Committee recommends that the GOA give consideration to establishment of an ombudsperson or ombudsperson office for which to make application for additional compensation in exceptional or extraordinary cases. Such an office may serve to identify any cases that do not appropriately fall within one of the categories of injuries or due to extenuating circumstances warrant additional consideration.

# x Proposed Reform of Health Care Model

Health care professionals are committed by training and motivation to aid in the recovery of traffic injured patients. Commitment to health outcomes is vital to the success of any treatment model but it is vulnerable. Tort system aims at the recovery not of health but of money in an adversarial process that often pits healthcare professionals against each other in contests that may call into question their credibility, their competence, their motivations and the correctness of their professional opinions. Reform is required to ensure that health outcomes are the primary objective.

## A. Pre-2004

Consultations with health care providers in Alberta prior to enactment of the *Diagnostic Treatment Protocols Regulations* (DTPR) revealed consensus that early diagnosis and treatment is known to hasten recovery of traffic injured and expedite their return to work and normal life activities.

However, there was no established consensus in the health community as to the optimal methods of assessment and treatment modalities for the category of traffic injuries now known as soft tissue injuries, including Whiplash Associated Disorders.

Prior to the introduction of the DTPR in 2004, individuals who were injured in a motor vehicle collision, except for treatment from their medical doctors, were required to pay from their own pockets for their assessment and treatments. This process often caused delays and disagreements regarding the type and extent of treatment required.

## B. DPTR Model

### Goals and Principles

The primary goal of DTPR was to ensure delivery to traffic injured covered by the regulation of prompt and effective health treatment to assist their recovery.

First, the DTPR introduced the principle of using best evidence for diagnosis and treatment to achieve better health outcomes.

Second, the DTPR introduced the practice of direct billing to insurers for a specified type and amount of initial treatment. This was designed to ensure that the initiation of treatment for traffic injured with soft tissue injuries was not delayed pending insurer approval.

The DTPR applied specifically to the following types of injuries: sprains, strains, whiplash-associated disorders (WADs), some temporomandibular disorder (TMD) injuries, and related physical or psychological symptoms. Other injuries such as fractures, internal injuries, permanent incapacitating and catastrophic injuries were excluded.

The DTPR specifically outlined the types of treatments recommended for strains, sprains and WAD injuries, specified limits on the number of visits and treatments required and authorized payment for treatments.

The DTPR was intended to streamline the assessment and treatment process for both traffic injured and primary health care practitioners (PHCPs). It also included provision for a second level health care assessment opinion for instances of traffic injured who were not recovering as expected. For example, if the PHCP was uncertain about the nature of the injury, or believed that the injury was not resolving appropriately or within the expected timelines, the DTPR provided for referral of the traffic injured to an Injury Management Consultant (IMC).

The IMC could:

a. provide advice;
b. following review of all relevant information regarding the injury, examine the patient with reference to the diagnosis and treatment under the DTPR;
c. report on the diagnosis and treatment; and
d. recommend a further assessment or a multidisciplinary assessment of the injury.

If a traffic injured was diagnosed with a WAD I or II injury and had any alerting characteristics that could influence progress, the PHCP was required under the DPTR to seek to reassess the patient within 21 days of the collision and if the injury was not resolving, refer the patient to an IMC for an assessment and report.

The IMC would provide a report to the PHCP and the insurer about the diagnosis and treatment of the traffic injured.

## Erosion of Model

Enactment of the DTPR established initial consensus and acceptance by health professionals for an improved assessment and treatment of WAD injuries. However, the full potential of the model was not achieved.

Over time, lack of full compliance with the DTPR became more frequent, and as regards traffic injuries outside the DTPR, there was continued inconsistency of treatment, including probable overtreatment, undertreatment and ineffectual treatment.

In particular, the original purpose for which the IMC process was intended, namely improving clinical outcomes by conducting further investigations and assessments, confirming the diagnosis and prognosis or recommending other treatment modalities for the traffic injured was often ignored. Instead the IMC became focussed on requests for additional treatments under the DTPR.

The use of the alerting factors process was rarely followed.

Not all PHCPs respected the intent of the DTPR and some ignored information in the interpretive guides provided by the Superintendent of Insurance.

The DTPR process was not managed on behalf of the traffic injured, not universally monitored and there was a lack of accountability to ensure the clinical improvement of the patient.

There developed greater focus on active treatment, rather than evidence-informed patient education. As well, passive treatments which were meant to be a short term adjunct sometimes became instead the sole form of treatment.

After the 90 day DTPR process, the insurer was responsible to obtain a Medical Status Examination (MSE), or select a multidisciplinary assessment and treatment program. The health care provider had no authority to obtain an MSE or select a multidisciplinary assessment and treatment.

The Certified Examiner (CE) process has not met the intended purpose under the *Minor Injury Regulation* (MIR). It has been subject to erosion with the result that the CE roster is not current, and there is insufficient management, oversight and accountability of the CE process.

There is no system accountability to ensure reports are completed on a timely basis, consistent with the intent of the MI 3 forms under the MIR, or contain their opinions confirming the motor vehicle collision was the primary cause of the injury. As well, fees submitted for professional services were frequently not in compliance with the legislative guideline. Certain of these factors may have caused or contributed to courts declining to defer to CE opinions as the DTPR originally intended.

The current DTPR has no, or no effective, incentives for patients to recover and no, or no effective, incentives for PHCPs to improve patient outcomes.

Finally, the intervention of service providers in the litigation system dedicated to helping their clients to establish and maintain money claims for consequences of traffic injuries sometimes conflicted with, or delayed achievement of the goals of the health providers under DTPR.

# C. Reform

## Continuum of Care Model

The Committee is of the view that the diagnosis and treatment of all traffic injured would be better served by rededication to the original goals of the DTPR and extending its reach, with appropriate modifications and additions, so that it can have application as a superior care model for all Albertans injured in motor vehicle collisions.

Health outcomes would also be optimized by elimination of litigation, adversarial processes and friction points between the traffic injured and their health providers.

The Committee concluded that under a pure no-fault compensation model, Alberta could deliver these results by building further upon the original design of the existing DTPR so as to develop and deliver a modern, innovative, enhanced continuum of care model (hereafter COC), which continues to be principle-based, evidence-informed and apply to all traffic injuries.

The principle features of such an Alberta designed COC model will include the following:

a. encouraging collaboration among PHCPs, traffic injured and insurers;
b. incorporating in place of tort system service providers and representatives, independent injury navigators to advise and advocate on behalf of the traffic injured;
c. encouraging traffic injured at all stages to participate and remain engaged in their recovery, via for example, shared decision-making regarding choice of provider and treatment options;
d. eliminating any features that discourage traffic injured from early and effective recovery choices and encouraging those that do so; and
e. encouraging and incentivizing PHCPs to retain focus on improved health outcomes for the traffic injured.

For maximum health outcomes, the COC process must be independently and continuously managed, including continuously updating the COC with best available evidence, creating and maintaining ongoing education and training for PHCPs, independent injury navigators, and insurers.

The goals of all participants are aligned to help traffic injured patients resume as far as possible their normal pre-collision activities, assist in recovery and offset economic hardship as a result of the motor vehicle collisions.

A proposed enhanced COC model would ultimately require review, refinement and reassessment during a robust implementation phase involving service providers who would assist the culture shift, the transformation and develop and provide supporting roles. For the purposes of this Report, a proposed example is set out below for consideration.

## Proposed Enhanced COC

### Creation of new classifications of injuries

First, the Committee suggests creation of a classification of traffic injuries with neutral nomenclature to eliminate perceptions of stereotyping of persons who are traffic injured. The proposal is to create three classification of injuries as Type I, Type II and Type III.

#### Typical Symptomology and Treatment of Type I Classification

Traffic injuries that will normally fall into the Type I classification include strains and sprains of a musculoskeletal nature that from initial health assessment are expected to have a favorable recovery time ranging from a few days to a few months and leaving no permanent or serious impairment.

Since a Type I injury is likely to recover within days to a few months of the collision, patients should be educated and informed from the outset that their own inherent healing capacities are likely to lead to a substantial recovery and that while these injuries are disruptive and uncomfortable, they are not expected to have serious, long-term consequences.

During the period of recovery the patient may benefit from education, advice, reassurance and time limited evidence-informed clinical care in accordance with published evidence for effectiveness, including parameters of dosage, duration, and frequency.

For example, both patient and health providers should be reminded that most interventions produce at best, short-term benefits in the form of symptom relief and/or increased function and there is little evidence that higher dose intensity, more frequent attendance or prolongation of course of treatment are beneficial.

#### Diagnosis, treatment and rehabilitation

Type I injury diagnosis will be provided initially by a PHCP, which include medical doctors, physical therapists, chiropractors and nurse practitioners.

Primary Type I rehabilitation is contemplated to be provided independently by PHCP with reference to, and compliance with, enhanced protocols founded upon the former DTPR. Initially, it will not include psychological assessment, counselling or intensive daily programs.

Where, within 30 days of the primary rehabilitation, it is identified that the traffic injured is not resolving as expected, there will be a referral for an independent MSE. Following the MSE, a secondary rehabilitation may be recommended.

Secondary rehabilitation will entail a more comprehensive rehabilitation program provided by an interdisciplinary team that includes an assessment and all components of primary care. The PHCPs do not provide but are kept informed about this rehabilitation.

The emphasis of rehabilitation under secondary rehabilitation is treatment under the BioPsychSocial model (as currently defined under the existing DTPR) with the focus on restoration of function, reduction of pain and psychological sequelae.

Under the COC, clinical experts from all relevant disciplines, including psychology, psychiatry, neurology, and dentistry will assist in implementation design to develop and apply optimal practical protocols for assessment and treatment of complex injury cases that

involve concussion, TMD, chronic pain and psychological sequalae and will be applicable to both traffic injured and healthcare providers.

The injury navigator will monitor treatment and progress of the traffic injured.

Where during or at the conclusion of the secondary rehabilitation it is identified that the Type I injury will not resolve as initially expected, there will be referral for an interdisciplinary assessment and treatment using tertiary rehabilitation.

This innovation is expected to expedite recovery of the estimated 10-14% of traffic injured that did not previously respond to expected recovery milestones due to inappropriate assessment, untimely or ineffective treatment or delayed recovery including adversarial processes interfering with the focus of the traffic injured on optimal participation in treatment, or a combination of the foregoing.

Tertiary rehabilitation will provide the most comprehensive level of service, focussed more intensely on components of targeted treatment of the chronic pain and psychological sequelae.

However, injuries which initially include symptoms or complaints relating to TMD pain or mild traumatic brain injury (concussion) or otherwise will be referred for Specialist Assessment and Care.

## Typical Symptomology and Treatment of Type II Classification

A Type II injury typically will involve some type of loss of anatomical alignment, surgical integrity, such as fractures or dislocations or psychological, cognitive, and/or physiological functioning.

As well, there may be found evidence for major concern in the absence of expert care about the likelihood of complications developing and/or persisting and potentially significant impairment and disability.

A Type II injury is not likely to undergo spontaneous recovery and the traffic injured may require medical, surgical and/or psychiatric/psychological care to attain optimal recovery.

## Diagnosis, treatment and rehabilitation

Type II injury diagnosis initially may be provided by PHCP or emergency room physicians, and may require specialized consultation and/or inpatient hospitalization. Type II injuries will require specialist assessment and treatment that may involve inpatient care.

Type II injuries may be assessed, diagnosed and have treatment initiated by PHCP, but due to the severity of the injury, ultimately by specialist medical practitioners.

Rehabilitation for traffic injured with Type II injuries may require direction of medical doctors and include interdisciplinary team provision of ongoing care.

The injured person may require in-patient care. Their recovery may entail absence from work duties and they may need support for their daily care.

Monitoring of this traffic injured will require a specialist injury navigator.

The qualifications and certification of injury navigators contemplated under the COC for each of the injury classifications would be developed in consultation with subject matter experts in the implementation phase of the reform.

## Typical Symptomology and Treatment of Type III Classification

Type III injuries are catastrophic injuries and typically include a severe injury to the brain, spine or spinal cord, and may also involve fractures of the skull or spinal column resulting directly from trauma in a crash, or indirectly from complications associated with the original injury. These injuries are extremely serious and permanently incapacitating and will require a specific regulatory definition such as the catastrophic impairment under the current Ontario Statutory Accident Benefits Schedule (SABS).

Although those currently catastrophically injured in Alberta will comprise a small and perhaps decreasing number, Type III treatment and rehabilitation will consist of a long-term specially designed engagement of health, vocational and long-term care specialists involving interdisciplinary teams.

The Committee proposes that Type III injuries will be managed under a specially designed program from a diagnostic, treatment and long-term care perspective, and funded by allocation of a specified portion of each auto insurance policy premium to a pool, with a pool fund entity manager and structure similar to the current Facility Association.

Diagnosis, acute treatment and short and long-term rehabilitation will be placed under the direction of a specialist medical and rehabilitation panel and monitoring of progress and care of Type III traffic injured. They will require a specialist injury navigator since these traffic injured will have significant daily needs including care, personal assistance, domestic support and an ongoing equipment, medical needs and require benefits available for long-term attendant care and services.

The Committee proposes to be included under reformed COC, features such as those observed under the NSW example, including the following:

a. provision for:
   i. medical treatment;
   ii. acute inpatient care;
   iii. rehabilitation;
   iv. specialist and expert medical care; and
   v. pharmaceutical expenses for life.
b. assignment of a provider certified as either specialist injury navigator or a lifetime care coordinator to:
   i. work in collaboration with the injured person, healthcare providers and insurers in the acute care and rehabilitation phases to help develop rehabilitation and community participation plans that identify short and long-term goals consistent with desire;
   ii. focus on helping the person adjust to the sequalae of the permanent injuries;
   iii. help regain as much daily function and independence as possible;
   iv. identify options for accommodation, transport, education, employment, social and recreational activity; and
   v. help the injured person and their family develop a community participation plan to enable the person to access all available activities and opportunities.
c. undertaking of a planning process to include:
   i. specific goals of the injured person including educational, social and employment;
   ii. services and support required including identifying any specific skills;
   iii. time frames;

iv. specific service entry, exit and transitional strategies;

v. roles and responsibilities of those involved in support;

vi. agreed review date to assess the adequacy of the plan; and

vii. support for carers.

Following the rehabilitation towards discharge, the life care coordinator would help the person and family focus on living with long-term injury sequelae and identify their ongoing support needs. Following discharge the program would typically provide daily services such as:

a. aids and appliances;
b. home and transport;
c. personal care;
d. domestic services;
e. childcare services;
f. nursing care;
g. assistance with community access;
h. educational and vocational services; and
i. respite care.

This lifetime care and support program would be financed through a fully funded pool collected from a portion of every auto insurance premium, using the current Facility Association structure as a model for the purpose of managing the fund and making distributions in accordance with the approval of the Traffic Injury Regulator (described under Section XI of the Report) according to established guidelines.

The guidelines would establish the particulars of the lifetime care and support and means by which the pool funds could be invested prior to use for the long-term benefit of the Type III injured.

Standards would be developed for service providers covering a range of skills, training and experience. Care providers would be approved by the Traffic Injury Regulator to ensure quality of service. The model of service delivery would, as far as practicable, give control of the selection of service providers and coordination of services to the traffic injured and or their families.

It may be advisable to establish an advisory council or board of the long-term care program with authority that would:

a. oversee the fund, including its investment;
b. approve the guidelines for eligibility and care need assessment;
c. approve the assessor fee schedule; and
d. approve the care provider fee schedule.

An advisory council would include two practicing health professionals with relevant experience in treating persons with catastrophic injuries, consumer representatives from relevant disability organizations, care provider representatives and members of the insurance industry. The advisory council would advise and report to the Minister or the GOA as to the operation of the model.

Funds paid into the program would be to provide the full cost of providing lifetime care and medical treatment services to this group of traffic injured. The pooling of the funds would protect against the possibility of poor estimation of the program. Lump sums would no longer reflect compensation for future treatment lifetime care and domestic assistance performed on an unpaid basis, but would be provided through the program.

Impairment benefits for pain and suffering and economic loss Type III injured would remain consistent with what is currently provided under the current accident compensation model.

In determining the portion of the premium to be dedicated to this fund, the Traffic Accident Regulator and the pool fund entity manager would rely on independent actuarial advice to ensure that the fully funded principle is maintained.

## Continuum of care model to enhance optimum recovery for all traffic injured

Type I injuries are assessed, diagnosed and treated by PHCP using evidence-informed practice protocols defined in the COC.

The PHCP will engage the traffic injured in their rehabilitation, providing them with choice of provider and control of their rehabilitation within the COC.

The PHCP will complete the appropriate documents to initiate primary traffic injureds likely to recover. All documentation is to be collected by an independent injury navigator.

Recovery is attained when in the determination of the PCHP, or a medical panel when the case requires, the traffic injured is able to resume as far as possible, their normal, pre-collision activities.

Progress toward recovery is under the supervision of the PHCP, and initially, documented at or before 30 days, and reported to the injury navigator who will monitor the progress.

A maximum cost to the insurer for 90 days will be $3,500.

The traffic injured are incentivized to recover, by engaging in their rehabilitation programs and if there is agreement by the traffic injured, the PHCP and the injury navigator, that recovery is attained prior to 90 days, the file will be closed with the insurer and will not be opened again. At that point, monies that had not been required for rehabilitation will be placed into a Rehabilitation Maintenance Account (RMA).

The RMA will be accessible by the traffic injured to be used with prior joint approval and agreement of the PHCP and the injury navigator for purposes that sustain the recovered person's health and wellness, for example, personal training or health equipment.

At or before 30 days of rehabilitation, if there are alerting factors with a WAD diagnosis, progress is not moving forward as expected or the PHCP does not believe the injured person will likely recover, a referral for an independent Medical Status Examination (MSE) by a qualified practitioner must be made.

The MSE will recommend continued participation under the COC, a secondary rehabilitation program or an Interdisciplinary Assessment (IDA).

The secondary rehabilitation program is a more comprehensive rehabilitation program provided by an interdisciplinary team, but not the PHCP. The BioPsychoSocial model will be the focus of this program, in addition to restoration of function and reduction of pain and psychological sequelae. Reporting will occur on a regular basis to an injury navigator with a higher level of knowledge and experience to monitor the progress to recovery.

The secondary rehabilitation program will conclude within 90 days of the injury and costs will be within the original $3,500.

The traffic injured are incentivized to recover by engaging in their secondary rehabilitation program and if there is prior joint approval by the injured person, the PHCP and the injury navigator that recovery is attained within 90 days, the file is closed with the insurer and will not be opened again. Monies that had not been required for secondary rehabilitation at that point will be placed into an RMA.

The RMA can be accessed with the agreement of the PHCP and the injury navigator to be used for purposes to enhance the recovered person's health and wellness for example, personal training or health equipment.

If recovery is not attained within 90 days, a tertiary rehabilitation program will be initiated. This is the most comprehensive level. It will be delivered more intensely with additional components of treatment for chronic pain and psychological sequelae. Reporting will occur on a regular basis to an injury navigator with the highest level of knowledge and experience to monitor the progress to recovery.

The maximum cost to the insurer for rehabilitation program from 90 – 180 days will be $2,500.

The traffic injured is incentivized to recover by engaging in their tertiary rehabilitation program and if there is agreement by the injured person, the PHCP and the injury navigator that recovery is attained within 180 days, the file is closed with the insurer and will not be opened again. Monies that had not been required for this tertiary rehabilitation at that point, will be placed into an RMA.

The RMA can be accessed with the agreement of the PHCP and the injury navigator to be used for purposes to enhance the recovered person's health and wellness, for example, personal training or health equipment.

If recovery is not attained within 180 days, extended tertiary rehabilitation will be provided up to 240 days from the collision.

The maximum cost to insurers for this program will be $1,500.

The traffic injured is incentivized to recover by engaging in their extended tertiary rehabilitation program and if there is prior joint agreement by the injured person, the PHCP and the injury navigator that recovery is attained within 240 days, the file will proceed to final closure with the insurer. Monies that had not been applied for this final tertiary rehabilitation at that point, will be placed into an RMA.

The RMA can be in future accessed only for approved purposes to enhance the recovered person's health and wellness with the prior joint agreement of the traffic injured, the PHCP and the injury navigator.

## Medical Expert Panels

If recovery is not attained by 240 days, a Medical Panel of experts will be convened.

The purpose of the Medical Panel is to provide its consensus opinion as to whether the traffic injured has reached a maximum medical outcome and no further improvement would be expected as well as a consensus opinion on the percentage of permanent or partial impairment (according to an impairment schedule designed and approved by the Traffic Injury Regulator) if any, that remains with that traffic injured.

At or before 2 years from the collision, a Medical Panel of experts will be required to deliver a consensus opinion as to when the injured person has reached maximal medical outcome and percentage of impairment for the purpose of assessing benefit entitlement.

The Committee is of the view that the Alberta Workers' Compensation Board medical panel is an example of a successful model to be emulated.

In a recent article entitled Medical Panels in Victoria Australia and Alberta Canada, Carol Newlands,(2019) 27 JLM 239, the features of the medical panels and Appeals Commission under the Alberta Workers' Compensation system were reviewed. The following points are noted:

a. The Workers' Compensation scheme in Alberta is an administrative system in which "the courts play only a supervisory role in ensuring that decisions are … reasonable".
b. Medical panels were introduced in 2002 following the enactment of the *Workers' Compensation Amendment Act* 2002 SA 2002, c. 27. Mr. Dunford, Minister of Human Services and Employment stated that "the purpose of the medical panel is to get an independent, expert consensus based medical opinion, adding that "this would be binding" on the Workers' Compensation Board (responsible for administering the compensation scheme) and the Appeals Commission (the final appeal body)."– Alberta, Parliamentary Debates, Legislative Assembly, 29 April, 2002, 1014.
c. This model has continued to function for 17 years and panels are seldom used (only 19 referrals in 2016 and 16 in 2018). Medical panels may be called upon to provide medical findings where the Board or the Appeals Commission request assessment assistance with a medical issue during their evaluation of a claim. If either evaluating body determines there are conflicting medical opinions in relation to an injured worker's claim, a panel referral is mandatory. *Workers' Compensation Act RSA* 2000 c. W-15 s. 46.3(2).
d. The Appeals Commission has "exclusive jurisdiction to examine, inquire into, hear and determine all matters and questions… arising under the compensation legislation and regulations pertaining to it. S.13.1(1)". Such decision is "final and conclusive and is not open to question or review in any court." S. 13.1(1) .
e. The panels are administered by the Medical Panels' Office staffed by the Medical Panels Commissioner, an independent medical practitioner appointed by Lieutenant-Governor in Council and any Deputy Medical Panels Commissioners similarly appointed. The Commission has a number of duties under the legislation, including the appointment of appropriate medical practitioners to a medical panel when one is requested.

f. Each panel consists of three medical practitioners, one selected by the worker, one chosen by the employer and one chosen by the Board. The Commissioner starts the selection process by drawing up a list of eligible members from the general list held by the College of Physicians and Surgeons of Alberta. The practitioner selected must have expertise in the medical matter under consideration, be registered in Alberta or have equivalent status in another province and be available and willing to undertake the role.

g. A practitioner who has treated the worker cannot serve as a member of the assessing panel nor can one who has been consulted regarding the worker's injury, except under special circumstances, [*Medical Panels Regulation Alta Reg* 21/2018 s. 2 (6)(b)] nor can one serve who has provided services to the worker or the employer or as a partner or associate of such a practitioner.

h. The injured worker, the Compensation Board and the employer may each choose a preferred practitioner. If the worker is self-employed, a member of the employer's family or is a partner or director in the employer's company, the Medical Panels Commissioner will choose a physician on the individuals behalf. Similarly, the Commissioner will choose a practitioner if any of the three selectors fails to do so within two weeks of receiving the compiled list.

i. The appointed panel receives and must review all available relevant documentation pertaining to the matter and may interview and examine the claimant worker. If the worker has elected to appoint a medical professional advisor, the latter may provide input and make representations to the panels.

j. After completing the steps, the hearing panel is required to provide a "report of its medical findings, including reasons supporting the medical findings …". *Regulation* 21/2018 s. 5

k. The legislation states that "[t]he medical findings of a medical panel are binding on the Board, the Appeals Commission and all other persons with a direct interest in the claim. The medical findings of a medical panel are final and conclusive and not open to question or review in any court." WCA RSA 2000 c.W-15 s. 46.3 (12) (13]

l. As such, there could be no review on the merits of the panels' medical findings. See *Alberta (Workers' Compensation Board) v. Alberta (Appeals Commission for Alberta Workers' Compensation)* 2010 ABQB368 (31 May 2010), where Hillier J. held that under the legislation, the Appeals Commission had "exclusive jurisdiction to examine, inquire into, hear and determine all matters and questions arising under (this) Act and the regulation…" (WCA s.13.1(1).

m. Hillier, J. further held that the Appeals Commission had been vested with a "very broad and comprehensive authority"… (p 81) to undertake its given role,… and that as such, it was the role of the Commission to interpret the relevant legislation and to do so in a manner "that is consistent with the scheme and the intention of the Act and that ensures coherence and avoids absurdity". (Page 82) He further noted that having received the findings of a medical panel, it was the responsibility of the appellate body to determine compensability issues by application of the required legal test. (p 85-88)

## Benefits Assessor Panels

A panel of experts in medical and rehabilitation services will determine the level and extent of impairment benefits the traffic injured will be entitled to receive according to a schedule designed and approved by the Traffic Injury Regulator, such as that in place used under the no-fault benefits model used currently in Saskatchewan.

A panel of experts in future care and income replacement cost calculations will determine the future care costs and loss of past and future income and other related financial claims.

This panel would be modelled after the medical experts panel described above with appropriate modifications.

Additional costs may include home care costs, medical equipment for home care and the like.

## Certain Specific Costs of Care Model

It is the Committee's understanding that the cost of diagnostic investigation, acute treatment and rehabilitation is currently billed to Alberta Health Services (AHS) and recovery of costs included in a health care levy negotiated with insurers. The reforms proposed may result in changes to the costs currently borne by the GOA and the insurance industry, and the costs currently transferred between the insurance industry and other entities such as Alberta WCB and self-insured entities and require appropriate cost transfer adjustment to eliminate or minimize cross subsidization.

## D. Conclusions

1. The Committee concluded that the redesigned continuum of care model outlined combines the most useful features of existing health care treatment regimes with views of subject matter experts. It establishes a new paradigm that will encourage collaboration, innovation and continuing improvement among service providers based on evaluation of performance, health outcomes and research.

2. The proposed continuum of care model will address the deficiencies identified in the current system, namely delay, conflict, inappropriate and ineffective treatment and duplications in service. It will reallocate resources to produce better health outcomes for all, not merely a portion of all traffic injured in Alberta.

3. The continuum of care model will provide more rational individualized diagnosis and treatment of Alberta traffic injured. In turn it will encourage the collaborative pursuit of optimal health outcomes among the health service providers, insurers, the Traffic Accident Regulator and the traffic injured themselves.

4. Because the proposed continuum of care model will extend to all traffic injured including those at fault, the Committee expects that the key elements of the new model, including the elimination of current costs that did not improve health outcomes, the reduction and elimination of certain lump sum payments for pain and suffering, the implementation, management and oversight of superior evidence-informed protocols and health provider practices, will deliver much improved health outcomes. It further expects that over time, this redesign will reduce the cost of medical treatment and income compensation due to improved health outcomes. Reduced stabilized costs will result in sustainable, predictable and stabilized premium levels over the long term.

5. The Committee concluded that the proposed pure no-fault private enterprise model should trend toward expediting recovery of Type I and Type II injuries, and optimizing treatment and long-term care for Type III injuries, all of which, in turn, should result in reduced medical costs and income claims over time. This trend will be achieved through the maximum effort of all participants to deliver optimal performance which will be verified by collecting and examining all the relevant data and the use of modern technology including artificial intelligence and applying medical innovations.

## E. Recommendations

The Committee recommends the foregoing continuum of care model be adopted as part of its proposed pure no-fault accident compensation model, with the intention that its service providers be subject to oversight of a new Traffic Injury Regulator.

# XI Proposed Reform of Auto Insurance Regulatory Regime

In concluding that conversion to a pure no-fault auto insurance compensation model would be the optimal solution for the needs of the Alberta traffic injured and the motoring public, the Committee took into consideration that a pure no-fault standard mandatory policy which delivered an expert designed, enhanced continuum of health care built upon the features of the existing DTPR would provide a superior collaborative, research oriented and evidence and performance based environment for treating all traffic injured. The new standard automobile insurance policy would be more affordable and accessible to motorists and would provide long-term sustainability. The optional products would deliver an additional layer of choice in the provision by insurers of a sufficient array of additional insurance coverages to a basic mandatory automobile insurance product. A pure no-fault auto insurance model provided by a private enterprise delivery system could allow Albertans to extract the best of both worlds: greatest cost transparency, swiftest ability to react and adjust to changing economic conditions, provision of innovative solutions to the true stakeholders and potentially superior results from business and scientific partnerships resulting in quickly and efficiently delivered optimal health outcomes. It recognized that the new model must be culturally shifted to be evidence-informed and principle-based. Finally, it recognized that transitioning the regulatory regime to a pure no-fault accident compensation model for Albertans will require a wise blend of the best features of existing pure no-fault auto insurance compensation models, informed by the strong collaborative efforts of those remaining and emerging service providers necessary to the success of the reformed model to contribute thoughtful and informed views as to its modernized state. The Committee sets out its observations as to optimal features of a reformed regulatory model taking into account some additional features presented by the fact of private enterprise delivery.

## A. Making the Changes Necessary for Fundamental Alberta Auto Insurance Reform

The Government of Alberta (GOA) remains the ultimate legislative authority over the reformed auto insurance compensation model to enact statutory and regulatory laws applicable to Albertans. The Committee concludes that a reformed traffic accident regulatory structure would include reporting to GOA as required, responding to GOA requests and keeping it apprised of changing circumstances that required input and direction.

The Committee recognized that too much regulation can hinder the best efforts of private industry to provide products and services to consumers, while too little regulation can leave consumers unprotected. In the case of the standard mandatory insurance product, the Committee proposes a regulatory structure that will oversee all aspects of the accident compensation system. In the case of optional insurance products, with a much lighter regulatory touch, the traffic accident regulatory structure should attain a superior blend of innovation and improved provision of services from the competitive private enterprise participants.

The Committee concludes that for these twin goals to be attained, the traffic accident regulatory structure will be most responsive to both government and industry, if it is designed and operated independently of both, while still responsible to government for its performance and results and responsive to industry for timely adaptation to change and improvement as economic conditions require.

A meaningful shift in culture, model and processes requires participation and support from both existing and exiting service providers including insurers, health care providers, legal practitioners, ancillary providers and the existing regulators as well as the motoring public.

In particular, key service providers under the reform model, namely the remaining auto insurers and the health care providers, will need to undergo a significant culture shift from their current modes of operation. Their services will be streamlined, however, the goals will be to target and enhance superior outcomes. The new environment will enable facilitation of more performance-based interaction and connection among their sectors. The partnerships developed should enhance and coordinate their delivery of benefits to traffic injured.

The Committee observes that after transformation, the reformed regulatory regime must not be or become overly bureaucratic, since optimal health outcomes for traffic injured require swift delivery of effective treatment. The continuum of care model contemplates rapid review of treatment data to ensure treatments are effective and to allow adjustment, modification and innovation to be quickly translated to ensure continuous improvement. Proper oversight of qualification and training and continuous improvement of claims and health delivery is essential to ensure the high standards of performance initially established are maintained, updated and upgraded where needed. An independent structure with the authority to issue guidelines in respect of the performance of interrelated services should enhance coordination and innovation.

The Committee concludes that there exist in the current system many competent and able service professionals who may be recruited to adapt and adjust their skills to participate effectively and with employment satisfaction

in a new collaborative accident recovery environment that encourages joint participation to achieve common goals.

While it is not the intention of this Committee to prescribe a specific structure of the new regulatory regime, since the proper design requires more detailed dialogue in an implementation phase, the Committee outlines below the key features it has extracted from its study to guide those who undertake the implementation.

## Needs of the new model

The Committee concluded that a culturally shifted, robust automobile insurance compensation system should address at least the following needs:

a. emphasis on recovery and wellness of the individual;
b. immediate and proactive treatment and return to work;
c. increased efficacy of health professional service in assessment and treatment of traffic injured;
d. greater predictability that ensures affordability of premiums and long-term stability;
e. monitoring of skills, capability, qualification and service patterns of all service providers;
f. independent oversight through a new auto insurance administration consisting of coordinated regulators and support staff to ensure fair determination and provision of claimants' entitlement to benefits;
g. sufficient authority for regulators, for example, to issue guidelines for effective monitoring, managing, incentivizing and sanctioning participants to ensure effectiveness; and
h. coordination and cooperation between regulators and service providers, including insurers, and health and claims assessors to adopt:
    i. effective data driven claims management; and
    ii. effective information technology to continuously analyze evidence to improve health recovery outcomes and to inform ongoing recalibration of regulatory guidelines and performance standards.

## Changes in Culture

A robust auto compensation system culturally shifted toward these priorities would require:

a. adherence by all service providers to evidence-informed treatment guidelines and possible stipulated cost allowances to ensure uniform, effective and fair claims management and medical treatment;
b. undertaking by insurers to retrain and recruit future claims managers and currently employed claims management insurance staff with skillsets more appropriate to the reform model; and
c. accreditation of all service provider specialists participating in the new system.

A robust automobile compensation system culturally shifted toward these priorities would need to meet the following challenges:

a. maintaining balance and fairness of best practices in claims management process without legal representation;
b. exploring possibility of establishing a formal link with employers (as WCB does) to align rather than impede the guidance and management of treatment directed at rapid recovery and return to work;
c. collaborating with insurers to develop effective independent oversight;
d. designing guidelines to establish cooperative participation in delivering swift and effective management and resolution of claims;

e. ensuring insurers' healthy relationships with their claimants are preserved during the claims management and resolution process so as to facilitate the ability to manage the injured person's return to health and work; and
f. identifying fraudulent and managing exaggerated claims and methods to eliminate the same.

## B. The New Model and Processes

The proposed pure no-fault model that replaces the tort system will substitute a new regulatory framework designed and committed to oversight of the proper treatment of traffic injured in the claims process, including health services to address recovery, rehabilitation or ongoing care, and evaluation of medical and financial status for purposes of determining appropriate financial benefits to restore losses due to injury.

The Committee concluded that the Alberta Workers' Compensation model provides a useful example of an administrative structure that delivers the services required for an entire provincial pool of injured persons, in place of tort. The Committee concluded that a Traffic Accident Regulator, independent from government and the auto insurance industry, can provide equal or superior oversight and regulation as regards the claims process, delivery of health benefits, assessment and determination of health status and claims, review or appeal processes, and certification and qualification of all service providers who participate under the reform model.

The Committee recommends implementation of an alternative administrative regulatory system, described in this Report as a Traffic Accident Regulator, that will replace tort components of the current model and provide for:

a. a standardized claims process for traffic injured to present claims for health treatment and compensation for pecuniary losses;
b. a comprehensive process of individual assessments of accident losses for traffic injured including diagnosis, evaluation of appropriate health treatment, benefits and finalized impairment determination;
c. a comprehensive process for determination of income replacement benefits; and
d. a process for overseeing delivery of services of providers including:
    i. health service provider certification;
    ii. insurer rating practices and processes;
    iii. income replacement service provider certification;
    iv. traffic research and innovation;
    v. accident injury research and innovation; and
    vi. research to combat fraudulent conduct, including theft and fire loss claims.

The reformed pure no-fault model requires a claim support service which would:

a. be funded by insurers but supervised by an independent administrator; and
b. provide at least the following services:
    i. central claims lodgement portal;
    ii. transparent, clear and comprehensive information to traffic injured claimants about claims processes;
    iii. greater knowledge and control for traffic injured with little or no experience in the claims process;

iv. assistance with administrative steps such as submission of claims form;

v. assistance to claimants to navigate the issues and options in their claims;

vi. advice on review processes and requirements;

vii. in certain limited cases where warranted, assistance to communicate with the insurer;

viii. a claimant advocate, navigator, or enhanced advice service available to persons who require enhanced support due to being socially disadvantaged, disabled, challenged due to diverse cultural or linguistic backgrounds so that they have multilingual, culturally appropriate and accessible information and basic advice to expedite the claims recovery process and provide cost effective information to claimants and their families;

ix. claims advocates or navigators that would support traffic injured;

x. informal claims process that would minimize bureaucracy;

xi. research on best practice approaches to injury prevention management and optimizing recovery;

xii. incentives to encourage more consumer-centric claims management with emphasis on wellness of injured consumer;

xiii. advice and assistance to service providers such as health, community services and government service providers;

xiv. collaboration between regulator and service providers to vigilantly identify and combat fraudulent and exaggerated claims; and

xv. exploration of possible insurance protection for employers who provide paid work for traffic injured who recovered to partial capacity.

The new model requires a medical assessment process to provide:

a. the following services:

i. implementation of a reformed medical assessment model that ensures treatment paths are consistent with established and current best practice guidelines to facilitate optimal recovery and containment of treatment costs;

ii. establishment of a single entry point;

iii. early intervention including health provider screening for risk factors that may impede predicted recovery;

iv. mandatory assessment processes after certain time period for all accident claims;

v. with proactive treatment for injury, recognition of those claimants with reduced motivation to comply with essential self-management aspects of a treatment program;

vi. single medical assessment conducted by a certified panel of medical specialists selected from a rotating roster;

vii. establishing regulated treatment allowances aligning to best practice guidelines to be used uniformly by all insurers;

viii. establishment of an independent panel of medical specialists as sole decision makers about assessment and treatment in lieu of duelling experts resulting in associated delay, increased costs and potential impaired recovery; and

b. be structured with:

i. provision that the panel decisions will be conclusive evidence as to the degree of permanent impairment of the injured person; and

ii. provision that a review/appeal tribunal may not reject a medical panels' certificate as to the degree of permanent impairment and substitute its own determination unless there has been a denial of procedural fairness in the issue of the certificate and the tribunal is satisfied admission of the certificate would cause a substantial injustice to a party to the proceedings.

The new model requires a financial claims assessment process:

a. with these objectives:
   i. establish a roster of panellists with appropriate training, qualifications, knowledge, experience and personal skills to evaluate and determine quantum of financial claims and benefits for traffic injured based on certificates issued by the Traffic Injury Regulator;
   ii. set up and administer processes for claims assessments; and
b. within a framework containing:
   i. provision that the panel decisions will be conclusive evidence as to the benefits and financial compensation based on statutory table of claims; and
   ii. provision that a review/appeal tribunal may not reject a claims assessment panels' certificate as to the nature and amount of benefits and financial compensation and substitute its own determination unless there has been a denial of procedural fairness in the issue of the certificate and the tribunal is satisfied admission of the certificate would cause a substantial injustice to a party to the proceedings.

The new model requires a reconfigured rate regulator to continue the current role and duties of the AIRB and to take on additional responsibilities and to interact with the other arms of the Traffic Injury Regulator as has been described extensively in Sections VIII and IX of this Report.

The new model requires a reconfigured rate regulator to continue the current role and duties of the AIRB and to take on additional responsibilities and to interact with the other arms of the Traffic Injury Regulator as has been described extensively in Sections VIII and IX of this Report.

The new model requires a board to oversee all operations and final appeals which:

a. serves as regulatory accident compensation tribunal for oversight of claims processes to ensure fair determination and provision of claimant's health and financial entitlement to benefits;
b. serves as regulatory accident compensation tribunal for oversight of health and medical treatment, assessment and evaluation of permanent injury to ensure fair determination and provision of claimant's entitlement to health benefits; and
c. serves as regulatory accident compensation tribunal for oversight of claims assessment panels to ensure fair determination and provision of claimant's financial entitlement to benefits and compensation.

The Committee foresees that such a board could be structured in a manner similar to the current Alberta WCB model although led by a statute appointed leader to ensure independence.

Given that the insurers carrying on business in Alberta will be underwriting a portion of the administrative costs of the new model, there must be sufficient representation of their views on the board to ensure appropriate participation and feedback.

## C. The Transitional Period

### Role of Government

The GOA will need to provide certain communication services during the transition including:

a. an ongoing education for traffic injured and the motoring public about the model changes to ensure a sound understanding of the recovery model and set an expectation that traffic injured should receive timely support for return to health, social and economic participation;
b. an effective communications strategy to emphasize goal of recovery and wellness to encourage behavioral attitude shift during reform implementation process;
c. an effective communication strategy focussing on rapid recovery during reform period, such as the Traffic Accident Commission promotion activities in Victoria, Australia during its scheme transformation; and
d. periodic review, such as every three years, to determine, measure and adjust for impact on claimant experience, timeliness of benefits, performance and satisfaction of service providers, insurer profits and the like.

### Role of Service Providers

Requirements for service providers choosing to transition and participate in the reformed model include:

a. adopting an approach to assist claimants in recovery, benefits management and finalization rather than claims and payment benefits disputes; and
b. all service provider specialists to undergo and receive appropriate accreditation.

### Role of Insurers

Insurers will need to:

a. retrain future claims managers and currently employed claims management staff;
b. retrain and recruit staff with skillsets more appropriate to the new recovery model; and
c. adhere to guidelines and to ensure uniform, effective and fair market conduct in relation to injury claimants.

### Role of Participating Medical/ Health Professionals

Medical/health professionals will need to:

a. pursue increased efficacy of health professional service in assessment and treatment; and
b. undergo and receive appropriate specialist's accreditation where required.

### Role of Legal Professionals

Legal service providers choosing to transition and participate in the reformed model may find opportunities to serve a reformed regulatory role in the way of advising service providers or accepting term appointment to the accident compensation tribunal.

### Future alignments

The establishment of the Traffic Accident Regulator board may be assisted by guidance from the past and current members and staff of the AIRB, which has been by all accounts, an effective regulator in a private enterprise model, to better inform the new roles and ensure linkages between the information as

to recovery and health outcomes and health innovations that may assist in forecasting future premium levels.

After implementation there may arise opportunities for collaborative relationships to develop between certain healthcare providers and insurers to maximize efficiencies and health outcomes. The Committee's view of the reform is that there should be space to foster development of such opportunities, provided that the oversight of the Traffic Accident Regulator always ensures the maintenance of, and compliance with, the standards it has established. These collaborations could have long-term advantages in providing reliable information for insurers to improve their array of optional programs and in turn those could inform improvements to the services delivered as regards the mandatory product.

Once implemented this model is expected to potentially reduce costs to the Alberta health system and to the court system.

It is worth keeping a weather eye on these potential reductions, if the government realizes savings it would otherwise have spent in maintaining the court system, while insurers are underwriting the cost of the replacement administration.

If the proposed reforms establish greater savings than anticipated over the medium and long term, those amounts should be monitored so that either refunds or reduced premiums are passed on to consumers. By the same reasoning, it may be necessary for the AIRB, in a reconstituted form, to be assigned an expanded role to monitor profit levels of insurers during the transition and going forward to ensure the profits do not reach excessive levels.

There should be a recognized role for the insurer associations such as IBAA, IBC and FA to participate in the information exchange and research projects for the mutual benefit of the Alberta traffic injured and motorists.

## D. Traffic Injury Innovation

The Committee foresees opportunities to harness the benefits of a consolidated network of service providers to deliver accurate, easily understood and disseminated information to the motoring public and the traffic injured to encourage their participation in the pure no-fault accident compensation model for a combined effort to decrease the loss costs of automobile usage, and at once maximize the benefit of and reduce cost of health delivery services to traffic injured.

Where the new arms of a Traffic Accident Regulator can collate and refresh most informed information about ways to improve and optimize delivery of a new accident compensation system, they can also in combination improve all outcomes by sharing forward such information to all service providers with a view to educating and reinforcing the relevant information to the true stakeholders. Moreover, bolstering this process will deliver greater transparency of information exchange.

For example, educational information can be formulated for consistency among the Traffic Accident Regulator and registry agents, driver trainers, insurance agents and brokers, insurers, health providers, auto dealers, auto repair and car rental businesses, government departments and other social agencies and then delivered on a continuous stream to consumers.

The experiences of the Traffic Accident Claims Regulator can be informed and improved by ongoing exchange of information and innovations between insurer employees, and such improvements in turn communicated to consumers.

Opportunities for private enterprise service providers that are recruited under the new model may arise to improve delivery of products and services to consumers. One detailed example relates to health and medical clinics that currently serve the traffic injured.

The Committee was guided by the endorsement of the health strategies referenced in the *Marshall Report* (Porter Lee Article Harvard Business Review October 2013 Issue) and observed potential goals for a newly established traffic injury model could include:

a. eliminating features of a value-based system with decades long entrenched interests and practices;
b. encouraging clinicians to shift focus from the desire to maintain their traditional autonomy and practice patterns to prioritize patients' needs and patient value and have the discipline to progress through the resistance and disruptions that will result;
c. providers adopting the value goal, a culture of patients first, and the expectation of constant, measurable improvement;
d. establishing the primary goal of attaining health outcomes that matter to patients relative to the cost of achieving those outcomes;
e. shifting the focus from physician visits, hospitalizations, procedures, and tests to the patient outcomes achieved;
f. replacing with a system in which services for traffic injured are concentrated in health-delivery organizations and in the right locations to deliver high-value care;

g. shifting the care coordination, especially for patients with costly needs, to organizing around the patient's medical condition;
h. improving outcomes without raising costs or lowering costs without compromising outcomes, or both;
i. recognizing that providers who can improve patient outcomes, can improve the efficiency of providing excellent care;
j. delivering care by a dedicated, multidisciplinary team of clinicians who devote a significant portion of their time to the medical condition; and
k. encouraging such team to assume responsibility for the full cycle of care for the condition, so that
    i. providers see themselves as part of a common organizational unit;
    ii. patient education, engagement, and follow-up are integrated into care;
    iii. the unit has a single administrative and scheduling structure;
    iv. a clinical care manager oversees each patient's care process;
    v. the team measures outcomes, costs, and processes for each patient using a common measurement platform;
    vi. joint accountability is accepted for outcomes and costs;
    vii. focus to achieve the best outcomes at the lowest cost; and
    viii. as outcomes improve, with the tools to manage and reduce costs, even as reimbursements plateau and eventually decline, providers with teams with more experience and better data will improve value more rapidly and attract still more volume.

The Committee suggests consideration be given to a joint Traffic Injury Innovation Panel comprised of insurance industry and health experts to continue to research and review ways to optimize treatment for traffic injured.

With exploration of the viability of integrated patient units (IPUs), there could be added benefits and outcomes including:

a. potential for patients to miss fewer days of work and need fewer physical therapy visits;
b. better care can lower costs, and increase productivity;
c. producing faster treatment, better outcomes, lower costs, and, usually, improving the condition due to restructuring of work;
d. improving and excelling by tracking progress over time and comparing their performance to that of peers;
e. rigorous measurement of outcomes and costs may improve health care, and systemic measurement of results in health care can improve results; and
f. clinicians who document their patients' outcomes (such as their time to return to work) or the actual resources used in treating those patients over the full care cycle can objectively prove added value.

The joint Traffic Injury Innovation Panel could study the potential benefits of establishing agreed factors to assess the patient experience with the health status achieved such as:

a. degree of health or recovery:
    i. functional level achieved;
    ii. pain level achieved;
    iii. extent of return to physical activities; and
    iv. ability to return to work.

b. time to recovery:
   i. time to begin treatment;
   ii. time to return to physical activities; and
   iii. time to return to work.
c. disutility of care or treatment process:
   i. delays and anxiety; and
   ii. pain during treatment.
d. sustainability of health or recovery:
   i. nature of recurrence;
   ii. maintained functional level;
   iii. ability to live independently; and
   iv. need for revision or replacement.

Porter and Lee have reported that:

a. health care providers should consistently measure outcomes by condition to enable universal comparison and stimulate rapid improvement;
b. outcomes are starting to be incorporated in real time into the process of care, allowing providers to track progress as they interact with patients; and
c. providers should measure costs at the medical condition level, tracking the expenses involved in treating the condition over the full cycle of care.

In the view of the Committee, a collaborative approach among the regulators, auto insurers, health industries and all ancillary service providers could well provide a superior accident care compensation model for all Alberta traffic injured and motorists utilizing a collective aptitude and appetite for high-performance and proven outcomes.

Such a model would likely reduce health costs in the short and long term in properly treating traffic injured by eliminating costs of overtreatment, ineffective treatment and wrong treatment, and expediting delivery of health treatment and benefits.

Such a model would encourage all service providers to provide optimal service.

Such a model would eliminate substantial costs of the tort components of the existing system and redirect those savings to the motoring public.

Such a model would likely also reduce the financial burden on the Alberta health care system as regards those traffic injured who are not currently receiving any or any proper treatment for traffic injuries.

Such a model would reduce the costs to the court system, which resources could be redirected to other classes of cases.

## E. Alignment with other government agencies

The Committee recognizes that implementation of this model will impact the existing roles of certain programs operated by other government and industry agencies which will require review and alignment, in particular about how to maintain appropriate deterrence of intentional driving misconduct, and how to treat traffic injured and wrongdoer motorists who do not have automobile insurance, including pedestrians and cyclists.

Other existing programs overseen by Alberta Health, and municipal and federal governments must also be reviewed to determine needs for alignment and to ensure duplication of services is eliminated and that appropriate cost sharing of accident benefits is undertaken.

## F. Conclusions

1. The Committee has included in its recommendations extension of the jurisdiction of the AIRB or, alternatively, expanding its mandate under a new reform model. It offers a few additional words of guidance with respect to AIRB's role in future.

2. The Committee observes that the predecessor Alberta Auto Insurance Board was first constituted in approximately 1970 as a statutory body established independent from the Government of Alberta. From that date until about 2003, it functioned efficiently in delivery of rate and rate related decisions as a prior approval board.

3. In about 2003, the Alberta Auto Insurance Board was reconstituted as the Alberta Insurance Rate Board (AIRB) and since then reported directly to the Minister of Finance, as a part of the Government of Alberta, although it has been funded by the automobile insurance industry. While the jurisdiction of the AIRB is similar to that of its predecessor, as noted under Section VIII C of this Report, some overlapping jurisdiction has emerged with that of the Alberta Superintendent of Insurance which has resulted in concerns about the efficiency of the operation of both regulators.

4. The Committee concluded that while the AIRB has worked well under the existing model, the motoring public would be better served if it reverted to its former status, so that it could provide independent expert advice to the government from time to time as circumstances dictate, and on a regular basis interact more nimbly and informally with auto insurers and other affected parties as regards rate and rate regulating issues.

5. With its existing expert knowledge about the specific operation of prior approval, the Grid, Territories, rating factors that should be permitted and prohibited and new optional products such as UBI, the AIRB members and staff are in a unique and valuable position to offer advice and guidance in an implementation phase.

## G. Recommendations

1. The Committee recommends that the Auto Insurance Rate Board should be reformulated to comprise an essential part of a Traffic Injury Regulator. Those features that work well under the current private enterprise model should be retained and blended with those features that work well under the current Alberta Workers' Compensation Model and which could be appropriately adapted to a comprehensive Traffic Injury Regulator in a private enterprise environment.

2. The Committee recommends that more expanded collaborative dialogue be undertaken among the auto insurance industry providers, health providers, claims providers, proposed injury navigators and government officials prior to and in the implementation phase before a final design is adopted. Collaborations among these providers could have long-term advantages in providing reliable information for insurers to improve their array of optional programs and in turn those could inform improvements to the services delivered as regards the mandatory auto policy.

# XII Actuarial Forecast of Impact of Proposed Reforms on Premiums and Benefits

The Committee intends that its proposed vision of the pure no-fault auto insurance compensation model should be viewed as an outline which is to be further reviewed and refined after fulsome dialogue with those service providers who will participate in the delivery of the new products and services contemplated. However, for the purpose of demonstrating that its proposed pure no-fault auto insurance compensation model would meet the requirements under its Mandate, the Committee engaged a consulting actuary to provide a preliminary costing of its proposed model together with three variations.

As discussed in Section XI of this Report, the Committee retained a consulting actuary to predict potential saving of premium costs of its proposed pure no-fault model. The Committee provided the actuary with a series of assumptions upon which to proceed with its costing exercise.

The Committee explained its theory of a continuum of care program for traffic injured identified as Type I, II and III categories, as well as the proposal for a long-term care program that envisioned a fully funded pool for catastrophically injured, and managed by the Traffic Injury Regulator.

We asked the actuary to assume the creation of a new administrative infrastructure described as a Traffic Accident Regulator that would independently deliver a claims process for traffic injured, decisions by medical and financial expert panels to provide final determinations of permanent medical impairments and calculation of financial benefits. This regulator would include the tribunal to conduct reviews or appeals of panel decisions.

The Committee asked the actuary to base its costing on the experience of the Alberta Workers' Compensation Board as regards the number of claims and appeals under its existing system.

The Committee asked the actuary to assume the infrastructure cost for these offices would be borne by auto insurance premiums.

The Committee asked the actuary to cost a reformed model (Model 1) based on an assumption of 90% of full income replacement, in line with the provision in the Saskatchewan and Manitoba no-fault models. As noted, this percentage of recovery would be higher than the income recovery of tort claimants represented by legal counsel under the current model due to the estimated 33% reduction for contingency fees. However, it could, in other circumstances be lower than income replacement recovery of claimants who were not represented by counsel.

While the Committee is of the view that a pure no-fault model that delivers 100% recovery (other than in exceptional or extraordinary circumstances, such as traffic injured who are infants and children) is not appropriate on public policy grounds, it recognized that the final decision on the amount of replacement income rests with the Legislature.

Accordingly, for the purpose of making a comparison, the Committee instructed the actuary to cost a second model (Model 2) that would contain all of the components in Model 1 except for the assumption of 100% replacement income.

The Committee recognizes that more consultation with the service providers, regulators and government would be required, for example, to ascertain the viability of optional income replacement insurance products for consumers, before the precise percentages and other factors were finally selected for implementation.

The actuary was instructed to assume:

a. no change to the calculation of the health care levy paid to Alberta Health Services;
b. the Government of Alberta (GOA) would legislate mandatory use of winter tires for the winter seasons; and
c. the GOA would authorize conversion of property damage compensation to a direct compensation model (DCPD).

The actuary was instructed to disregard any savings that would accrue to automobile insurance from the reduction of overhead due to the creation of the Traffic Accident Regulator.

Although the Committee found no justification for any serious consideration to be applied to the elective/choice no-fault model as exists currently in Saskatchewan, for the purpose of comparing the premium cost of a tort automobile insurance policy in Alberta under an elective/choice no-fault version, the Committee requested its consulting actuary to perform that calculation and to include it in a third costing model (Model 3) for comparative purposes only.

Both the Committee and the consulting actuary recognized that the exploration of a costing exercise in an elective/choice scenario was problematic because there were many difficulties and questions surrounding the manner in which the Traffic Accident Regulator would deal with a component that pre-existed the current system. Accordingly, the model for this scenario is highly theoretical and must be treated as undertaken only for purposes of providing a general comparison of premium costs.

Finally, the Committee requested its consulting actuary to calculate the potential savings that could be achieved during the transitional period of the reform (Model 4). This version is not a stand-alone model, in fact, but an endeavor to assist the GOA in determining whether interim measures to reduce existing costs in the current system pending implementation of a pure no-fault model could produce savings and ease additional stress on the premium dollar for the benefit of the motoring public.

We confirm that:

a. the assumption referenced in paragraph 3 at page 266 was applied to the costing of Model 1 and 2;
b. the assumption in paragraph 4 at page 266 was implicit in its costing; and
c. when the tort option is selected under Model 3, all accident benefits recoverable were the same as those in the currently existing model.

The conclusions demonstrated that under the Model I, the pure-no fault compensation system would be expected to produce a 9.4% reduction in auto insurance premiums for the majority of consumers who purchase the full package of insurance.

While AIRB describes third-party liability and accident benefits as “basic” and all others as “additional coverages”, the Committee intends the term “full package” in this Report to include third-party liability, accident benefits, uninsured and underinsured motorist, collision and comprehensive coverages.

The Committee observes that if the auto insurers were able to deliver on the expected reduction in cost of overhead, by reason of the creation of the Traffic Accident Regulator, the 9.4% reduction might well increase to as much as 10%.

The Committee expects that once the operation of the model delivers the maximum expected improved health outcomes, the Basic premium rates will remain stable or decrease in the medium term, i.e., three years, and should thereafter rise no more than 1% above Consumer Price Index increases in the long term.

For those consumers who desire and require more extensive coverage for their potential medical, health and financial losses after a traffic injury, the optional products the insurance industry has committed to make available should allow for a wide array of choice for consumers to tailor to their individual needs.

The report of Joe S. Cheng, F.C.I.A, describing the outcomes of the 4 various costing models follows.

# ACTUARIAL MODELLING

FOR THE

AUTOMOBILE INSURANCE

**ADVISORY COMMITTEE**

Prepared by: Joe S. Cheng, F.C.I.A

For: Treasury Board and Finance

Date of Letter: May 27, 2020

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May 27, 2020

Automobile Insurance Advisory Committee
c/o Treasury Board and Finance
4th Floor, Terrace Building
9515-107 Street
Edmonton, AB T5K 2C3

Dear Advisory Committee Members:

**RE: Actuarial Modelling**

The Government of Alberta has asked the Automobile Insurance Advisory Committee ("the Advisory Committee") to develop alternate insurance compensation models to the current model. Treasury Board and Finance has engaged J. S. Cheng & Partners Inc. (JSCP) to assist the Advisory Committee in estimating the likely impact that the proposed automobile insurance models would have on private passenger automobile claims costs and consumer premiums in Alberta.

We are pleased to submit our report for your review. Please let us know if you have any questions or comments about our report.

Yours truly,

Joe S. Cheng, FCIA

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## EXECUTIVE SUMMARY

The purpose of this report is:

- To determine the premium rate adequacy of the Alberta private passenger automobile insurance product for policies issued in policy year 2022;
- To estimate the impact on private passenger automobile (PPA) claims costs of proposed models of Alberta's automobile insurance system;
- To estimate the impact of the same proposed models on PPA premiums paid by consumers.

The proposed models were provided by the Advisory Committee and are briefly described below.

- Model 1 is a pure no fault insurance scheme that bars tort action for automobile accidents in Alberta. Besides higher benefits for medical, rehabilitation, attendant care or homecare, and income replacement, this scheme also provides benefits for diminished quality of life on a no fault basis. All no fault benefits are indexed to the Alberta CPI.
- Model 2 is the same as Model 1 except the income replacement benefit (IRB) for wage earners is set at 100% of net income (i.e. after tax, CPP contributions and EI premiums) vs 90% in Model 1.
- Model 3 offers insureds a choice between Model 1 and a tort option. When the tort option is selected, no fault benefits are the same as under the current product. All tort benefits would be paid by the insured's insurer (the one that collects the bodily injury liability premium). This is direct compensation for bodily injury liability claims.

- Model 4 is a transitional insurance scheme. The Advisory Committee recommends the following changes to the current product:
  a) Adjust the prejudgment interest (PJI) rate for non-pecuniary loss to match the interest rate for pecuniary loss.
  b) Cap claimant lawyer contingency fees at 25% of a settlement and all expert fees in the range of $3,000 to $5,000 per case.

Some new features would also be common among all four models. Direct compensation for vehicle damage (DCPD) would be introduced in Alberta with all licensed auto insurers automatically participating. Out of province insurers would be allowed to participate if they are signators to such an agreement. Non-vehicular damage and out of Alberta accidents would continue to be paid by the at fault party. Also, winter tires would be mandatory for the winter season, and insurers would be required to offer a discount for bodily injury, accident benefits, DCPD, collision and all perils.

The detailed benefits of each model are shown in Appendix 6.

The best way to compare the current product against all four models is to measure the loss cost (per vehicle) and premium for a full package policy[1].

| | Full Package per Vehicle | Model Current | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|---|---|
| (1) | Claims cost | 1,371 | 993 | 1,001 | 1,318 | 1,296 |
| (2) | Target Premium* | 2,053 | 1,542 | 1,553 | 1,982 | 1,952 |
| (3) | 3/31/2020 Average Premium | 1,703 | | | | |
| (4) | Savings in Claims per Vehicle | | -378 | -370 | -53 | -75 |
| (5) | Indicated Premium Change ($) | 350 | -161 | -149 | 279 | 249 |
| (6) | Indicated Premium Change (%) | 20.6% | -9.4% | -8.8% | 16.4% | 14.6% |

* Target premium is the premium that will produce a 7% profit margin on premium

[1] Most policyholders purchase a full package policy. A full package policy includes third party liability, accident benefits, uninsured and underinsured motorist, collision and comprehensive coverages. AIRB describes third party liability and accident benefits as Basic; all others are Additional coverages.

If Model 1, 2 or 3 should be adopted, accident benefit claims over five years in duration could be funded by a portion of automobile premiums, and managed by an organization similar to the Facility Association.

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| Vehicle damage in Alberta | 31 | 4 & 7 | 97 & 165 |
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## DISTRIBUTION AND USE

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This report is intended for the management of Treasury Board and Finance (TBF) and the Advisory Committee. Its sole purpose is to estimate the impact of proposed models on Alberta PPA claims costs and premiums.

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## DATA AND RELIANCE

We used the following data to produce our estimates:

- GISA's 2018-2 Incurred Loss Development Factor PPA excluding Farmers Alberta Report (Bulletin no: 2019-08)
- GISA's 2018-2 Incurred Loss Development Factor PPA excluding Farmers Alberta (Revised) Report (Bulletin no: 2019-15)
- GISA's 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16)
- GISA's Catastrophe Report Alberta 2002-2018 (Bulletin No: 2019-47)
- GISA's Industry Expense Report (Bulletin No: 2019-06)
- GISA Accident Benefit Data by Transaction (2016-2018) and Kind of Loss Code
- AIRB's March 27, 2020 Bulletin: 01-2020
- AIRB's published approved rate level changes published for 2017Q4 to 2020Q1
- Alberta Traffic Collision Statistics (2016 and 2017)
- 2016 Alberta Census
- 2019 Alberta Closed Claims Survey
- OSFI financial data for property and casualty companies.

We have relied on the general accuracy of the above information, without audit or independent verification, and we assumed it was complete. The accuracy of our results is dependent upon the accuracy and completeness of this underlying data.

## DEFINITIONS

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Accident year 20XX is defined as the 12-month period in which claims occur. For example, accident year 2020 is the 12-month period from January 1 to December 31, 2020.

Accident year loss ratio is defined as ultimate (undiscounted) losses occurring in a 12-month period divided by the earned premiums in the same 12-month period. This is the loss ratio shown in GISA's actual loss ratio report.

AHS means Alberta Health Services.

AIRB is the Automobile Insurance Rate Board.

ALAE means allocated loss adjustment expenses.

Basic Coverage is third party liability plus accident benefits.

Full Package consists of Bodily Injury (BI), Direct Compensation (DC), Property Damage (PD), Accident Benefits (AB), Uninsured Automobile (UA), Underinsured Motorists (UM), Collision (CL or "Col."), and Comprehensive (CM or "Comp.") coverages.

Gender neutral: In this report, the term "he" is meant to include either he or she.

GISA is the General Insurance Statistical Agency.

Health Levy is the loss cost earmarked for AHS. According to GISA's 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16), the Alberta health levy percentages are applied to earned Third Party Liability premiums with the resulting amount then added on to otherwise ultimate loss costs for the Third Party Bodily Injury coverage.

Injury Type is described in the Advisory Committee Report as Type I, II, or III. With the recommended treatment, Type I injuries are expected to have a favourable recovery time ranging from a few days to a few months and leaving no permanent or serious impairment. Type II injuries may involve some type of loss of anatomical alignment, surgical integrity (such as fractures or dislocations), or psychological, cognitive and/or physiological functioning. For costing, we subdivided Type II into 2S and 2L, where S and L stand for short and long duration, respectively. Type III is a catastrophic injury.

Loss Cost is the ultimate loss and ALAE per vehicle. Depending on the context, it may also include ULAE, Health Levy and catastrophe (CAT) loading. Loss cost is used interchangeably with claims cost.

Medical panel is an expert committee responsible for assessing the degree of impairment of severely injured claimants.

Net income means after tax and deductions for CPP and EI.

Policy year loss ratio is defined as losses against policies issued in a 12-month period divided by written premiums of the same policies.

PPA means Alberta private passenger automobile excluding vehicles rated as farm use.

Rate adequacy means a rate level that can achieve at least 7% of premiums as profit in accordance with AIRB's rate filing guidelines. A rate level that fails to achieve 7% of premiums as profit is deemed to be inadequate.

Target loss ratio is discounted losses (at an appropriate rate per annum) divided by target premiums that can achieve exactly 7% of premiums as profit.

Target premium means a premium level that can achieve exactly 7% of premiums as profit.

ULAE means unallocated loss adjustment expenses; they are insurers' salaries and overhead for the claims department.

Ultimate losses mean the sum of all claim payments (past and future payments excluding time value of money).

Uncertainty load is added to all no fault benefits in Models 1 and 2. It is added to reflect uncertainty in a new insurance scheme or where the data is limited. This is widely used in agriculture insurance ratemaking.

## CURRENT RATE ADEQUACY METHODOLOGY

To determine the rate adequacy, we compare:

- March 31, 2020 written premium (based on 2018 written premium and approved rate changes from 2018 to March 31, 2020)
- Policy Year 2022 target premium (based on losses trended to January 1, 2023 and discounted to July 1, 2022)

March 31, 2020 Written Premium

As published by AIRB for each automobile insurance company from 2017Q4[2] to 2020Q1, we listed (i) the approved rate changes (basic and alternative/additional) effective January 1, 2018 to March 31, 2020, (ii) renewal date, and (iii) market share. The province-wide average approved rate change was the market share weighted average rate change of each company. The average rate adjustments are (see Appendix 5.7):

| Description | Rate Adjustments to March 2020 | Coverages |
|---|---|---|
| Basic | 26.01% | Third Party Liability and Accident Benefits |
| Alternative/ Additional | 8.33% | Underinsured Motorist, Collision, Comprehensive, Specified Perils and All Perils |

We brought the GISA 2018 written premium per vehicle by coverage to March 31, 2020 level by applying the average approved rate changes (see Appendix 5.9).

[2]Rate changes published in one quarter may have renewal dates effective in later quarters. For example, some rate changes published in 2017Q4 were effective in 2018Q1.

Policy Year 2022 Target Premium

To calculate the Policy Year 2022 target premium per vehicle, we divide loss cost (trended to January 1, 2023 and discounted to July 1, 2022) by the target loss ratio.

The main steps are (details below):

- Develop ultimate loss cost (without ULAE and Health Levy)
- Remove actual catastrophe (CAT) losses
- Select ULAE factors
- Add Health Levy
- Trend ultimate loss cost (with ULAE and Health Levy)
- Select weights for undiscounted loss cost (with ULAE and Health Levy)
- Determine and apply Covid-19 factors
- Discount Loss Cost (with ULAE and Health Levy)
- Apply CAT loading
- Apply commissions, taxes, other acquisition expenses, general expenses and profit margin

(1) Develop Ultimate Loss Cost (without ULAE and Health Levy)

We used the earned vehicle and ultimate loss and ALAE from GISA's Incurred Loss Development Factor Report to determine the ultimate loss cost by coverage.

(2) Remove Actual Catastrophe (CAT) losses

GISA's Catastrophe Report Alberta showed the catastrophe loss and expense for Comprehensive, Specified Perils and All Perils. We removed these CAT losses from the loss cost in the previous step to avoid distorting the analysis. An expected CAT provision ("CAT Loading") would be added after discounting the loss cost (details below in step 9).

(3) Select ULAE Factors

GISA's Actual Loss Ratio exhibit showed the ULAE. For each accident year (2016-2018), we calculated ULAE factor by taking the ratio of the ULAE per earned vehicle to the ultimate loss and ALAE per earned vehicle (see Appendix 5.4). We selected 9.25% based on the three year average (9.24%).

The ultimate loss and ALAE per earned vehicle (i.e. loss cost) were grossed up for ULAE using the selected ULAE factor.

(4) Add Health Levy

According to GISA's 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16), the Alberta Health Levy percentages are applied to earned Third Party Liability premiums with the resulting amount then added on to otherwise ultimate loss costs for the Third Party – Bodily Injury coverage. For each accident year (2016-2018), we calculated the Health Levy and added it to the Bodily Injury loss cost.

(5) Trend Ultimate Loss Cost (with ULAE and Health Levy)

For each accident year (2016-2018), ultimate loss and ALAE per earned vehicle were trended using factors from AIRB's March 27, 2020 Bulletin 01-2020 by coverage from July 1 of each accident year to the average accident date of policies issued in policy year 2022 (January 1, 2023). The cut-off date for the past and future trends is April 1, 2019. For details of the trend factor, please refer to Appendix 5.4.

(6) Select Weights for Undiscounted Loss Cost (with ULAE and Health Levy)

We selected weights of 0%, 40% and 60% for accident years 2016, 2017 and 2018, respectively because we could not get 2019 data in time for this study. The selected ultimate loss cost for policy year 2022 is the weighted average of the trended loss cost from the previous step (see Appendix 5.3).

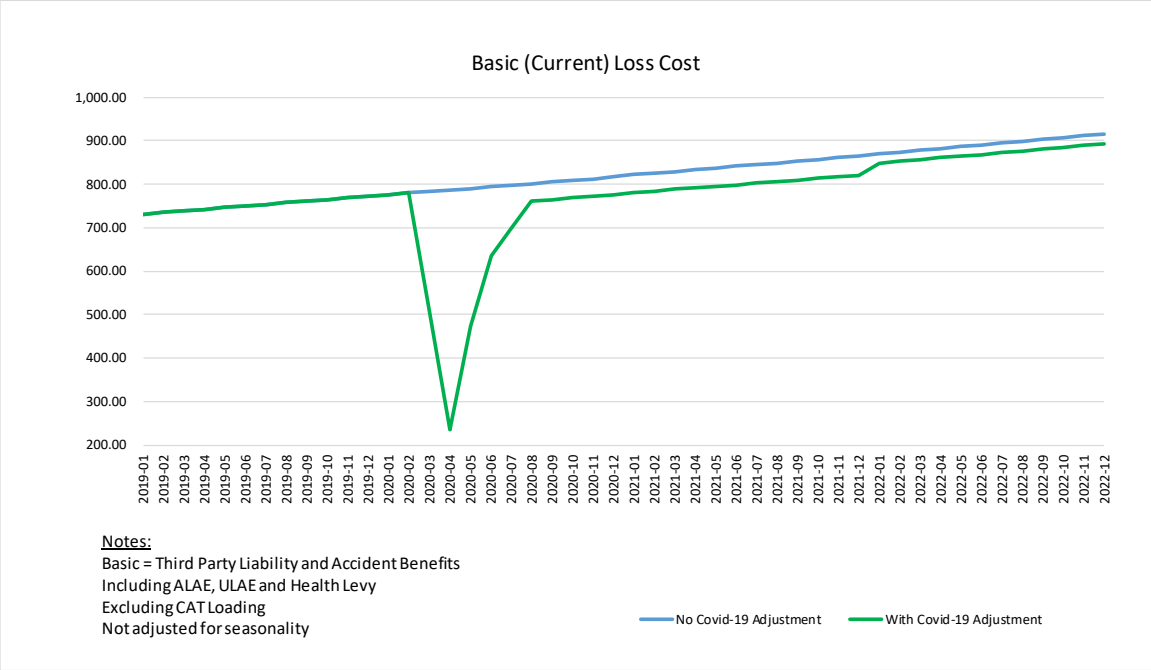
(7) Determine and apply COVID-19 factors

From mid-March 2020, some jurisdictions issued measures to either self-isolate or stay at home because of the COVID-19 pandemic. Even though these orders were gradually removed starting mid-May 2020, some people will continue to work from home and, therefore, spend less time travelling on the road. As a result, the frequency of vehicular collisions may decrease. Therefore, for coverages affected by the frequency of vehicular collisions, the ultimate loss cost per vehicle may also decrease. The table below summarizes the impact.

| Coverage | | Covid-19 Impact |
|---|---|---|
| Bodily Injury | BI | Reduced |
| Physical Damage | PD | Reduced |
| Accident Benefits | AB | Reduced |
| Underinsured Motorists | UM | Reduced |
| Collision | Col. | Reduced |
| Comprehensive | Comp. | No impact (not affected by frequency of accidents) |
| Specified Perils | SP | No impact (not affected by frequency of accidents) |
| All Perils | AP | 2/3 of Collision impact |

Note: Accident Benefits include Uninsured Motorists

We selected 15% for (accident year) 2020, 5% for 2021 and 2.5% thereafter. For details, please refer to Appendix 5.8. The impact of Covid-19 on the Basic loss cost of the current model is depicted in the following chart but it affects all models in this report equally.




Since we are estimating the loss cost for policy year 2022, only the 2.5% is applicable to this report.

(8) Discount Loss Cost

We derived the payment patterns by coverage (see Appendix 5.6) from the GISA-2018-2 Loss Development Exhibits PPA-excl. Farmers Alberta Paid Loss and Expense triangles and the GISA projected ultimate losses. We selected a discount rate of 3.00% based on the 2019 investment yield for Canadian P&C companies (see Appendix 5.10). Loss costs were discounted to the average date of premium receipt (July 1, 2022) in order to offset any investment income earned on premiums prior to losses and expenses being paid out (see Appendix 5.2).

(9) Apply Catastrophe (CAT) Loading

There are 3 coverages with a CAT loading: Comprehensive, Special Perils and All Perils. For Comprehensive, the CAT loading was 57% of the loss cost based on AIRB's March 27, 2020 Bulletin 01-2020. The All Perils CAT loading is equal to the Comprehensive CAT loading loss cost. For Specified Perils, we selected a

CAT loading 52.5% of the loss cost based the 10-year average of CAT losses (from GISA's Catastrophe Report) as a percentage of non-CAT losses (see Appendix 5.5). In Appendix 5.1, we applied the CAT loading to the discounted loss cost.

(10) Apply Commissions, Taxes, Other Acquisition Expenses, General Expenses and Profit Provision

Commissions, taxes, other acquisition and general expenses as percentages of written premiums were taken from Industry Expense Report (Bulletin No: GISA 2019-06) summed to 26.2% (see Appendix 5.1).

We used the calculated loss cost divided by 66.8% (one minus expenses [26.2%] minus profit provision of 7.0%) to derive the target premium by coverage.

## MODEL COSTING METHODOLOGY

The detailed description of all four models is in Appendix 6. An abbreviated version is as follows:

Model 1

Model 1 is a pure no fault and no tort model for automobile accidents in Alberta. Vehicle damage is paid by one's insurer under direct compensation property damage (DCPD) if the motorist is not at fault; if the motorist is at fault, the damage is paid under collision provided that the coverage is purchased.

Coverage for all accidents outside of Alberta and optional coverages remain unchanged from today. No fault benefits are expanded as follows:

(1) Funeral benefits are based on reasonable expenses up to $10,000.
(2) Death benefits are $100,000 for the head of household; benefits for surviving dependents are also increased.
(3) Medical expenses are increased from $50,000 to $500,000 with benefits payable until death.
(4) Certified attendant care and homecare expenses for approved claimants are available up to $500,000.
(5) Income replacement benefit (IRB) for wage earners is set at 90% of net income up to $1,000 per week. Benefits are payable as long as the individual meets the disability definition. Employer benefits (net of taxes, CPP and EI) are deducted from the IRB. There is a 7-day waiting period.
(6) IRB for non-wage earners is payable subject to a medical and claims panel's determination for those over 18 years of age. There is a 6-month waiting period.
(7) Diminished quality of life benefit is payable to eligible claimants up to $300,000.
(8) Housekeeping expenses for approved claimants are payable up to $150 per week and $100,000 in aggregate.

All accident benefits are indexed by regulation.

Model 2

Model 2 is a variation of Model 1. The only difference is Model 2 provides 100% net income to disabled wage earners versus 90% net income in Model 1.

Model 3

Another variation of Model 1, Model 3 provides a choice to the motorist. Each owner of a vehicle can choose either Model 1 or a tort version. The tort option is the same as the current policy except the bodily injury (tort) benefits will be delivered by one's own insurer when the motorist is not at fault.

Model 4

Model 4 is a transition model as any of Models 1, 2 and 3 will need some lead time to implement. Model 4 is the same as the current policy except for the following:

(1) Prejudgment interest rate. The prejudgment interest rate on non-pecuniary loss shall be set by regulation to match the prejudgment interest rate on pecuniary loss.
(2) Claimant lawyer contingency fee. The contingency fee charged by claimant lawyers will be capped by regulation at 25% of the total settlement or award.
(3) Expert fees. The expert fees charged in automobile litigation claims will also be capped by regulation.

**Costing of Model 1**

First, we started with the loss cost for each coverage of the current policy as of December 31, 2018. Where more refinement is needed in accident benefits, we used transactional data by kind of loss code and claim ID to develop our loss cost estimate for June 30, 2018 accident date.

The following pages briefly describe our methodology by coverage.

1. Accident Benefits

1.1 Funeral benefit (Appendix 1.1)
From the GISA transactional data, we obtained a range of funeral expenses in 2016-2018. We applied the proposed benefits and weighted them using the above distribution.

1.2 Death benefit (Appendix 1.2)
From the GISA transactional data, we mapped the status of the deceased and the number of surviving dependents to the current benefit schedule. Then we applied the proposed benefit schedule to the distribution we obtained from the 2016-2018 data. The loss cost is simply the total death benefits from the above mapping divided by the number of vehicles.

1.3 Medical/Rehabilitation expense (Appendix 1.3)
The Advisory Committee in its Continuum of Care (COC) process defines 3 types of injuries. We used GISA's transactional data to allocate all claimants into these 3 types of injuries. First, we validated our assumptions to reconcile our estimate to the loss cost in accident year 2018 at the current benefit level. Once our estimate matched the 2018 loss cost, we adjusted the benefit level of the 0.5% of catastrophically injured to $500,000.

1.4 Certified attendant care or homecare expense (Appendix 1.4)

This is a new coverage. We reviewed Ontario's attendant care experience as well as Alberta's IRB for wage earners. We examined their respective claim durations. Based on our discussion with the Advisory Committee, we understand the process to approve a certified attendant care or homecare benefit will be based on the assessment of a medical panel. Additionally, there will be no lump sum cash settlement. Therefore, the duration will be more like that of Alberta IRB claims.

We used a weighted average of the two claim durations (Ontario attendant care and Alberta IRB) to select the attendant care/homecare expense duration. For a catastrophically injured recipient, the average duration is 77 months. Applying the appropriate monthly benefit in accordance with the model description allows us to obtain the loss cost.

1.5 IRB for wage earners (Appendix 1.5)

The current policy has a maximum benefit duration of 2 years. We allocated the current Alberta IRB claimants into 3 injury types. We used the 2016 Alberta census to obtain the age, gender and wage distributions. We assumed the number of claimants to be 2800 in 2022. Then we simulated a pool of 2800 claimants' IRB using 2019 tax software. We validated our simulation so that our model replicated the average claim size in 2016 accident year.

Once we reconciled our simulation with the current product, we changed the weekly benefit in our simulation to the Model 1 level and produced the benefits for 2800 claimants. To arrive at the loss cost, we divided the total benefits by the number of vehicles. The range of benefits by gross wage band is shown in Appendix 1.5.

1.6 IRB for non-wage earners (Appendix 1.6)

The data for this benefit is extremely limited in the current policy. Therefore, we examined Ontario's experience and the 2019 Alberta Closed Claim Survey to estimate the potential number of non-wage earner claimants in Model 1. For every four wage earners claiming IRB, we assumed there may be one non-wage earner eligible for some form of IRB. However, IRB for non-wage earners is only available for those 18 years of age or older and has a 6-month waiting period. After this adjustment, we settled for 261 claimants per year. We used the same simulation model for wage earners to generate an estimate of the non-wage earners' benefit. The loss cost is simply total non-wage earners IRB divided by the number of vehicles.

1.7 Diminished quality of life (Appendix 1.7)

The Advisory Committee noted that no amount of medical treatment may be able to restore every injured person to a pre-accident state. For those who have residual impairment after receiving the recommended treatment and reaching the maximum medical outcome, a medical and benefit panel will assess the amount of impairment and determine a permanent impairment (PI) score. The benefit payable would equal the PI score multiplied by the maximum PI benefit (starting at $300,000 on January 1, 2022).

In our costing, we used the Saskatchewan Impairment Benefit Schedule[3] as a proxy for this PI determination process. From the 2019 Alberta Closed Claim Survey, we had a sample of over 2,000 claimants with various types of injuries. For the purpose of this report, we used our judgment to assign a PI score to each claimant. Recognizing that any injury type could have 3 levels of severity (minor, medium, or severe), we used the actual non-pecuniary claim amount as a surrogate for the level of severity. Within each type of injury, a larger non-pecuniary claim amount was assumed to be a more severe injury.

[3] The Personal Injury Benefits Regulations being Chapter A-35 Reg 3 (effective January 1, 1995) as amended by Saskatchewan Regulations 70/2002, 121/2002, 48/2004, 73/2007, 79/2007, 43/2014, 59/2014 and 99/2016

Every claimant in the sample was assigned an injury description, level and PI score. The aggregate PI amount for all claimants is the product of (i) the number of claims by injury level, (ii)PI score, (iii) the maximum PI benefit. The aggregate amount divided by the number of vehicles would give the loss cost. We assumed the PI benefit would be paid no later than 2 years after the accident because the medical and benefit panel would need time to confirm that the impairment is permanent before an assessment commences.

1.8 Housekeeping (Appendix 1.8)

Subject to the approval of the medical panel, the housekeeping benefit would be paid periodically up to the maximum eligible amount based on injury type II or III. We used the Alberta IRB claim duration and Ontario housekeeping frequency multiplied by $150 per week to estimate the loss cost.

1.9 Supplementary benefits

These are accident benefits paid when an Alberta motorist has an accident outside of Alberta, but the benefits scale in the place of the accident is higher than Alberta's. The loss cost of this benefit is small currently and should become smaller if Model 1 is adopted. As there was insufficient data, we applied judgment to make an estimate.

1.10 Uninsured or unidentified motorist

The GISA data showed a very low loss cost. Under Model 1, the benefit will not be applicable for accidents in Alberta. Again, we applied judgment to estimate the loss cost of this benefit.

An uncertainty load is added to all no fault benefit (1.1 to 1.10) loss cost estimates.

### 1.11 Bodily Injury in Alberta

The loss cost would be zero. However, healthcare continues to be provided by AHS under all models. We assumed the same levy for all models. The loss cost indicated is for the health levy only.

### 1.12 Bodily Injury for accidents outside of Alberta

From the Closed Claims Survey we estimated the proportion of bodily injury losses outside of Alberta. We applied this percentage to the GISA bodily injury loss cost as an estimate for this benefit.

### 1.13 Vehicle damage in Alberta

One of the arguments in favour of DCPD is the ability to service one's own customers better by using preferred service providers to repair vehicles and provide rental cars. We assumed a 25% greater usage of preferred service providers with the insurers getting a 5% savings on average. This produced a 1.25% reduction in loss cost for vehicle damage in Alberta.

### 1.14 All other property damage

Vehicle damage outside of Alberta and all non-vehicular property damage will be settled on a tort basis. From Ontario (which is a DCPD province), we estimated the amount of tort property damage and applied the proportion to the historical property damage loss cost to estimate the non-DCPD percentage. Once we got the split between DCPD and all other property damage, we applied the Ontario percent allocation to Alberta property damage loss cost.

### 1.15 Underinsured Motorist

There are no changes from the current policy to any of the five coverages. Their loss costs are derived in Appendix 5.

1.16 Collision

There are no changes from the current policy to any of the five coverages. Their loss costs are derived in Appendix 5.

1.17 Comprehensive

There are no changes from the current policy to any of the five coverages. Their loss costs are derived in Appendix 5.

1.18 All Perils

There are no changes from the current policy to any of the five coverages. Their loss costs are derived in Appendix 5.

1.19 Specified Perils

There are no changes from the current policy to any of the five coverages. Their loss costs are derived in Appendix 5.

2. Trending to January 1, 2023 (Appendix 7)

From section 1, we obtained the loss cost of each coverage on June 30, 2018. We applied the trend factors in AIRB bulletin March 27, 2020 (01-2020) for all coverages except accident benefits in Models 1 and 2, and developed loss costs at the January 1, 2023 level.

For Models 1 and 2, we used the following annual trend factors:

i) 4% for medical (2% plus 2% CPI)
ii) 0% for death, non-wage earners IRB, diminished quality of life, supplemental benefit, and uninsured motorist as these benefit level will start on January 1, 2022
iii) 2% for all other accident benefits.

3. COVID-19 factor

After the COVID-19 pandemic, we assume that some people may work from home from time to time. The average usage of vehicles should decrease and result in a reduction of collisions. We assumed a 2.5% reduction in policy year 2022.

4. Mandatory winter tires in the winter season

Based on a Quebec study, the use of winter tires in the winter season should reduce collision frequency by 3-5%. As a large number of Alberta motorists already use winter tires in the winter season, we assumed a 2.5% reduction in bodily injury, DCPD, accident benefits and collision.

**Costing of Model 2**

The methodology for costing Model 2 is the same as for Model 1 except the loss cost for wage earners is 100% of net income. Details are in Appendix 2.

**Costing of Model 3**

3.1 Accident Benefits

The loss cost of accident benefits is the same as the Model 4 policy.

3.2 Bodily injury in Alberta

As the tort benefit will be paid by the motorist's own insurer, there should be better integration with accident benefits and employer contribution resulting in better savings. The average reduction of loss cost is 8.33%. Details are in Appendix 3.

3.3 Bodily injury outside of Alberta

The loss cost would be the same as the current policy.

3.4 Vehicle damage in Alberta

The loss cost is the same as Model 1.

3.5 All other property damage

The loss cost is also the same as Model 1.

3.6 Others (Underinsured Motorist Coverage, Collision, Comprehensive, All Perils and Specified Perils)

The loss costs are the same as Model 1.

**Costing of Model 4**

4.1 Accident Benefits

The loss cost is 97.5% of the current policy due to the mandatory winter tire requirement during the winter season.

4.2 Bodily Injury in Alberta

The change in PJI rate, capping claimant lawyer's contingency fees to 25% of a settlement and expert fees to $3,000-$5,000 per case would result in 11.05% savings in loss cost. On top, there would be 2.5% savings due to the mandatory winter tire requirement during the winter season. The cumulative reduction in loss cost should be 13.28%. Details are in Appendix 4.

4.3 Bodily Injury outside of Alberta

The loss cost would be the same as the current policy.

4.4 Vehicle damage in Alberta

The loss cost is the same as Model 1 due to the mandatory winter tire requirement during the winter season and DCPD.

4.5 All other property damage

The loss cost is the same as Model 1.

4.6 Others (Underinsured Motorist Coverage, Collision, Comprehensive, All Perils and Specified Perils)

These are the same as Model 1.

## REFORM IMPACT ANALYSIS

The target premiums were determined as claims cost divided by 66.8% (expected claims ratio to premium). Claims costs (other than accident benefits) were discounted at 3% p.a. to recognize future investment income from the premiums received but not yet paid out in claims and expenses; accident benefits in Model 1 and 2 were discounted at 1% p.a. to reflect the indexing feature of the benefits. The general expenses were set to equal the current level so that the insurers would have sufficient time to reduce its human resources through attrition should any of the Models 1, 2, or 3 be adopted. Implicit in this assumption is an allowance for the cost of the Traffic Injury Regulator as defined by the Advisory Committee. The cost impact of all 4 models is as follows:

| Full Package[1] | % of DWP[2] | Distribution of Total Expenses | Current($) | Model 1($) | Model 2($) | Model 3($) | Model 4($) |
|---|---|---|---|---|---|---|---|
| Total Claims | 66.8% | | 1,371.14 | 992.70 | 1,001.23 | 1,318.31 | 1,296.23 |
| Total Expenses | 26.2% | 100.0% | | | | | |
| - Commissions | 12.6% | 48.0% | 258.22 | 193.96 | 195.41 | 249.28 | 245.53 |
| - Taxes | 3.8% | 14.5% | 78.00 | 58.59 | 59.03 | 75.30 | 74.17 |
| - Other Acquisition Expenses | 2.6% | 9.8% | 52.75 | 39.62 | 39.92 | 50.93 | 50.16 |
| - General Expenses[4] | 7.3% | 27.7% | 149.02 | 149.02 | 149.02 | 149.02 | 149.02 |
| Total Profit[3] | 7.0% | | 143.70 | 107.93 | 108.73 | 138.71 | 136.62 |
| Target Premium | 100.0% | | 2,052.82 | 1,541.82 | 1,553.34 | 1,981.54 | 1,951.72 |
| Mar 2020 Premium | | | 1,702.71 | | | | |
| Savings(+)/Inadequate(-)($) | | | (350.11) | 160.89 | 149.37 | (278.83) | (249.01) |
| Savings(+)/Inadequate(-)(%)[5] | | | -20.6% | 9.4% | 8.8% | -16.4% | -14.6% |

Notes:
(1) Full package = TPL + AB + Underinsured Motorists + Collision + Comprehensive
(2) Premium cost allocation is from Industry Expense Report (Bulletin No: 2019-06)
(3) Target Profit is 7%. It is based on March 27, 2020 Bulletin:01-2020 from Automobile Insurance Rate Board.
(4) General expenses were determined as 7.3% of the target premium of the current model
(5) = Savings or Inadequate(-)($) / Mar 2020 Premium

The above analysis shows that the current model could experience 20.6% premium rate increase between April 2020 and 2022. Model 1 or 2 would have a potential premium reduction of 9.4% or 8.8%, respectively.

Model 3 or 4 would reduce claims cost but not enough to provide premium reduction from the March 31, 2020 level.

## CONCLUSIONS

The Advisory Committee has considered four models:

Model 1 Pure No Fault with a Traffic Injury Regulator to deliver timely best practice medical treatment in a cost-effective manner.

Model 2 Every coverage is the same as Model 1 except IRB is increased from 90% of net income to 100%

Model 3 Choice between tort or no tort. If a motorist chooses the tort option, the policy is essentially the current product. The no tort option is Model 1.

Model 4 A transitional model. This is similar to the current product except the pre-judgment interest rate would be set to match the rate for pecuniary losses. Claimant lawyer contingency fees and expert fees would be capped.

All models would require mandatory winter tires during the winter season and vehicle damage in Alberta would be settled on a DCPD basis.

In terms of cost, Model 1 is the least expensive.

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# INDEX TO THE APPENDICES

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| Appendix 1 | Costing of Model 1 |
| Appendix 2 | Costing of Model 2 |
| Appendix 3 | Costing of Model 3 |
| Appendix 4 | Costing of Model 4 |
| Appendix 5 | Rate Adequacy of Current Model |
| Appendix 6 | Model Description |
| Appendix 7 | Derivation of Target Premium for Current Model as well as Model 1 to 4 |

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# APPENDIX 1 – COSTING OF MODEL 1

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Appendix 1.1 Funeral Benefit

Appendix 1.2 Death Benefit

Appendix 1.3 Medical/Rehabilitation Expense

Appendix 1.4 Certified Attendant Care or Homecare Expense

Appendix 1.5 IRB for Wage Earners

Appendix 1.6 IRB for Non-Wage Earners

Appendix 1.7 Diminished Quality of Life

Appendix 1.8 Housekeeping

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# APPENDIX 1.1

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Funeral Benefit

**Alberta**
**Automobile Accident Insurance Benefits**
**Funeral Benefits**

**Loss Cost (including ALAE; excluding ULAE ,Health Levy and CAT)**

| | | | 2016 | 2017 | 2018 | Average | Weighted Average | Comments |
|---|---|---|---|---|---|---|---|---|
| (1) | Weights | | 0% | 40% | 60% | | | Selected |
| **Current Product** | | | | | | | | |
| (2) | Reported Loss | ($'000s) | 796 | 729 | 933 | 819 | | GISA |
| (3) | Reported ALAE | ($'000s) | 19 | 25 | 13 | 19 | | GISA |
| (4) | Reported Loss & ALAE | ($'000s) | 815 | 753 | 946 | 838 | | GISA |
| (5) | Reported ALAE Ratio | | 2.36% | 3.28% | 1.39% | 2.27% | | = (3) ÷ (4) |
| (6) | Selected ALAE Ratio | | | | | | 7.00% | Assumption |
| (7) | Ultimate Loss & ALAE (Untrended) | ($'000s) | 808 | 723 | 909 | 813 | | GISA |
| (8) | Trend Factor | | 1.1772 | 1.0850 | 1.0000 | 1.0839 | | Model 5; Appendix D |
| (9) | Ultimate Loss & ALAE (Trended) | ($'000s) | 951 | 784 | 909 | 881 | | = (7) × (8) |
| (10) | Earned Car Years | ('000s) | 2,678 | 2,692 | 2,746 | 2,705 | | GISA |
| (11) | Ultimate Loss Cost (incl. ALAE) - Trended | | 0.36 | 0.29 | 0.33 | 0.33 | 0.32 | = (9) ÷ (10) |
| (12) | Ultimate Loss Cost (ALAE only) - Trended | | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | = (11) × (5) |
| (13) | Ultimate Loss Cost (excl. ALAE) - Trended | | 0.35 | 0.28 | 0.33 | 0.32 | 0.31 | = (11) - (12) |
| **Models 1 & 2** | | | | | | | | |
| (14) | Indicated Indemnity/Loss Increase | | 81% | 86% | 90% | 86% | | Page 2 |
| (15) | Selected Indemnity/Loss Increase | | | | | | 90% | Page 2 |
| (16) | Ultimate Loss Cost (excl. ALAE) - Trended | | | | | | 0.59 | = (13) × [1 + (15)] |
| (17) | Ultimate Loss Cost (ALAE only) - Trended | | | | | | 0.04 | = (16) × (6) |
| (18) | Ultimate Loss Cost (incl. ALAE) - Trended | | | | | | 0.63 | = (16) + (17) |
| (19) | Winter Tire Savings Factor | | | | | | 0.975 | Judgmentally Selected |
| (20) | Uncertainty Load | | | | | | 1.000 | Judgmentally Selected |
| (21) | Loaded Loss Cost | | | | | | **0.61** | = (18) x (19) x (20) |

**Funeral Benefits**

**Indemnity/Loss Increase**

(1) **Claimant Count**

| Count | Total | 2016 | 2017 | 2018 |
|---|---|---|---|---|
| Under $5,000 | 119 | 49 | 36 | 34 |
| $5,000 plus | 362 | 117 | 114 | 131 |
| Total | 481 | 166 | 150 | 165 |

(2) **Current Benefit - Model 3 & 4**

| Indemnity $ | Total | 2016 | 2017 | 2018 |
|---|---|---|---|---|
| Under $5,000 | 354,219 | 150,736 | 104,366 | 99,117 |
| $5,000 plus | 2,163,251 | 652,503 | 649,340 | 855,357 |
| Total | 2,517,470 | 803,239 | 753,706 | 954,474 |

(3) **New Benefit - Model 1 & 2**

| Increase |
|---|
| 0% |
| 100% |

| Indemnity $ | Total | 2016 | 2017 | 2018 |
|---|---|---|---|---|
| Under $5,000 | 354,219 | 150,736 | 104,366 | 99,117 |
| $5,000 plus | 4,326,502 | 1,305,006 | 1,298,680 | 1,710,714 |
| Total | 4,680,721 | 1,455,742 | 1,403,046 | 1,809,831 |
| % Increase | 86% | 81% | 86% | 90% |
| **Selected %** | **90%** | | | |

Note:

(1) GISA special reports.

(2) Current Model: Up to $5,000 in respect of the death of any one person.

(3) Model 1: Up to $10,000 in respect of the death of any one person

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# APPENDIX 1.2

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Death Benefit

**Alberta**
**Automobile Accident Insurance Benefits**
**Death Benefits**

**Loss Cost (including ALAE; excluding ULAE ,Health Levy and CAT)**

| | | | 2016 | 2017 | 2018 | Average | Weighted Average | Comments |
|---|---|---|---|---|---|---|---|---|
| (1) | Weights | | 0% | 40% | 60% | | | Selected |
| **Current Product** | | | | | | | | |
| (2) | Reported Loss | ($'000s) | 3,321 | 2,742 | 1,811 | 2,625 | | GISA |
| (3) | Reported ALAE | ($'000s) | 27 | 10 | 11 | 16 | | GISA |
| (4) | Reported Loss & ALAE | ($'000s) | 3,348 | 2,752 | 1,822 | 2,641 | | GISA |
| (5) | Reported ALAE Ratio | | 0.80% | 0.36% | 0.60% | 0.60% | | = (3) ÷ (4) |
| (6) | Selected ALAE Ratio | | | | | | 7.00% | Assumption |
| (7) | Ultimate Loss & ALAE (Untrended) | ($'000s) | 3,320 | 2,713 | 1,991 | 2,675 | | GISA |
| (8) | Trend Factor | | 1.1772 | 1.0850 | 1.0000 | 1.1021 | | Model 5; Appendix D |
| (9) | Ultimate Loss & ALAE (Trended) | ($'000s) | 3,909 | 2,944 | 1,991 | 2,948 | | = (7) × (8) |
| (10) | Earned Car Years | ('000s) | 2,678 | 2,692 | 2,746 | 2,705 | | GISA |
| (11) | Ultimate Loss Cost (incl. ALAE) - Trended | | 1.46 | 1.09 | 0.72 | 1.09 | **0.87** | = (9) ÷ (10) |
| (12) | Ultimate Loss Cost (ALAE only) - Trended | | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | = (11) × (5) |
| (13) | Ultimate Loss Cost (excl. ALAE) - Trended | | 1.45 | 1.09 | 0.72 | 1.08 | 0.87 | = (11) - (12) |
| **Models 1 & 2** | | | | | | | | |
| (14) | Indicated Multiplier Indemnity/Loss | | 4.83 | 5.25 | 8.02 | 5.73 | | Page 2 |
| (15) | Selected Multiplier Indemnity/Loss | | | | | | 5.73 | Page 2 |
| (16) | Ultimate Loss Cost (excl. ALAE) - Trended | | | | | | 4.98 | = (13) × (15) |
| (17) | Ultimate Loss Cost (ALAE only) - Trended | | | | | | 0.35 | = (16) × (6) |
| (18) | Ultimate Loss Cost (incl. ALAE) - Trended | | | | | | 5.33 | = (16) + (17) |
| (19) | Winter Tire Savings Factor | | | | | | 0.975 | Judgmentally Selected |
| (20) | Uncertainty Load | | | | | | 1.000 | Judgmentally Selected |
| (21) | Loaded Cost | | | | | | **5.20** | = (18) x (19) x (20) |

**Using Transactional Data**

| Status of Deceased | Survivors | 2016-2018 Claim Count | 2016-2018 Average Benefit | Models 1 & 2 Average Benefit |
|---|---|---|---|---|
| 2 Dependants | | 13 | 5,780 | 100,000 |
| Dependant | | 34 | 2,421 | 50,000 |
| Grief | | 22 | 433 | 0 |
| Head | 0 partners & 0 dependants | 2 | 11,240 | 100,000 |
| | 1 dependant | 2 | 27,104 | 150,000 |
| | 1 partner & 0 dependants | 59 | 25,081 | 100,000 |
| | 1 partner & 1 dependants | 8 | 29,550 | 150,000 |
| | 1 partner & 2 dependants | 1 | 35,000 | 200,000 |
| | 1 partner & 3 dependants | 1 | 41,400 | 250,000 |
| | 2 dependants | 17 | 31,248 | 200,000 |
| | 3 dependants | 17 | 37,071 | 250,000 |
| | 4 dependants | 11 | 43,109 | 300,000 |
| | 5 dependants | 3 | 49,133 | 350,000 |
| | 6 dependants | 1 | 55,400 | 400,000 |
| Head + 1 Dependant | 1 dependant | 1 | 29,200 | 200,000 |
| | 1 partner & 0 dependants | 1 | 27,000 | 150,000 |
| | 1 partner & 1 dependants | 3 | 32,750 | 200,000 |
| | 1 partner & 3 dependants | 3 | 44,467 | 300,000 |
| | 2 dependants | 2 | 33,500 | 250,000 |
| | 3 dependants | 2 | 39,500 | 300,000 |
| | 4 dependants | 1 | 45,000 | 350,000 |
| | 6 dependants | 1 | 58,000 | 450,000 |
| | 8 dependants | 1 | 71,066 | 500,000 |
| | 0 dependant | 5 | 22,825 | 200,000 |
| | 1 dependant | 1 | 35,800 | 250,000 |
| | 10 dependants | 4 | 622,319 | 500,000 |
| | 9 dependants | 1 | 87,464 | 500,000 |
| Partner | | 66 | 10,079 | |
| Partner + 1 Dependant | | 9 | 15,056 | |

**Summary**

| **Status of Deceased** | **Survivors** | **2016-2018 Claim Count** | **2016-2018 Average Benefit** | **Models 1 & 2 Average Benefit** |
|---|---|---|---|---|
| **Dependants** | | **47** | **3,350** | **63,830** |
| **Grief** | | **22** | **433** | **0** |
| **Head/Partner** | | **223** | **35,170** | **192,230** |
| **Total** | | **292** | **27,431** | **157,080** |

Dependant = Dependent Relative
Partner = Spouse/Interdependent Adult Partner
Head = Head of Household
Grief = grief counselling
Principal = principal sum payable

| | | | | Current Benefits Payable | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Survivor | | | | | | | | | | |
| Number of deceased persons | Status of deceased persons | Description 1 | Description 2 | Grief | Principal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total |
| 1 Deceased | Dependant | Up to age of 4 years | | 400 | 1,000 | | | | | | | | | | | 1,400 |
| 1 Deceased | Dependant | 5 to 9 years | | 400 | 2,000 | | | | | | | | | | | 2,400 |
| 1 Deceased | Dependant | 10 to 17 years | | 400 | 3,000 | | | | | | | | | | | 3,400 |
| 1 Deceased | Dependant | 18 to 69 years | | 400 | 2,000 | | | | | | | | | | | 2,400 |
| 1 Deceased | Dependant | 70 years and over | | 400 | 1,000 | | | | | | | | | | | 1,400 |
| 1 Deceased | Partner | | | 400 | 10,000 | | | | | | | | | | | 10,400 |
| 1 Deceased | Head | 0 survivors | 0 partners & 0 dependants | 400 | 10,000 | | | | | | | | | | | 10,400 |
| 1 Deceased | Head | 1 survivor | 1 partner & 0 dependants | 400 | 10,000 | 15,000 | | | | | | | | | | 25,400 |
| 1 Deceased | Head | 1 survivor | 1 dependant | 400 | 10,000 | 15,000 | | | | | | | | | | 25,400 |
| 1 Deceased | Head | 2 survivors | 1 partner & 1 dependants | 400 | 10,000 | 15,000 | 4,000 | | | | | | | | | 29,400 |
| 1 Deceased | Head | 2 survivors | 2 dependants | 400 | 10,000 | 15,000 | 6,000 | | | | | | | | | 31,400 |
| 1 Deceased | Head | 3 survivors | 1 partner & 2 dependants | 400 | 10,000 | 15,000 | 4,000 | 6,000 | | | | | | | | 35,400 |
| 1 Deceased | Head | 3 survivors | 3 dependants | 400 | 10,000 | 15,000 | 6,000 | 6,000 | | | | | | | | 37,400 |
| 1 Deceased | Head | 4 survivors | 1 partner & 3 dependants | 400 | 10,000 | 15,000 | 4,000 | 6,000 | 6,000 | | | | | | | 41,400 |
| 1 Deceased | Head | 4 survivors | 4 dependants | 400 | 10,000 | 15,000 | 6,000 | 6,000 | 6,000 | | | | | | | 43,400 |
| 1 Deceased | Head | 5 survivors | 1 partner & 4 dependants | 400 | 10,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | | | | | | 47,400 |
| 1 Deceased | Head | 5 survivors | 5 dependants | 400 | 10,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | | | 49,400 |
| 1 Deceased | Head | 6 survivors | 1 partner & 5 dependants | 400 | 10,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | | 53,400 |
| 1 Deceased | Head | 6 survivors | 6 dependants | 400 | 10,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | | 55,400 |
| 1 Deceased | Head | 7 survivors | 1 partner & 6 dependants | 400 | 10,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | 59,400 |
| 1 Deceased | Head | 7 survivors | 7 dependants | 400 | 10,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | 61,400 |
| 1 Deceased | Head | 8 survivors | 1 partner & 7 dependants | 400 | 10,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | 65,400 |
| 1 Deceased | Head | 8 survivors | 8 dependants | 400 | 10,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | 67,400 |
| 1 Deceased | Head | 9 survivors | 1 partner & 8 dependants | 400 | 10,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | 71,400 |
| 1 Deceased | Head | 9 survivors | 9 dependants | 400 | 10,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | 73,400 |
| 1 Deceased | Head | 10 survivors | 1 partner & 9 dependants | 400 | 10,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 77,400 |
| 1 Deceased | Head | 10 survivors | 10 dependants | 400 | 10,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 79,400 |
| 2 Deceased | 2 Dependants | Up to age of 4 years | | 800 | 2,000 | | | | | | | | | | | 2,800 |
| 2 Deceased | 2 Dependants | 5 to 9 years | | 800 | 4,000 | | | | | | | | | | | 4,800 |
| 2 Deceased | 2 Dependants | 10 to 17 years | | 800 | 6,000 | | | | | | | | | | | 6,800 |
| 2 Deceased | 2 Dependants | 18 to 69 years | | 800 | 4,000 | | | | | | | | | | | 4,800 |
| 2 Deceased | 2 Dependants | 70 years and over | | 800 | 2,000 | | | | | | | | | | | 2,800 |
| 2 Deceased | Partner + 1 Dependant | Up to age of 4 years | | 800 | 11,000 | | | | | | | | | | | 11,800 |
| 2 Deceased | Partner + 1 Dependant | 5 to 9 years | | 800 | 12,000 | | | | | | | | | | | 12,800 |
| 2 Deceased | Partner + 1 Dependant | 10 to 17 years | | 800 | 13,000 | | | | | | | | | | | 13,800 |
| 2 Deceased | Partner + 1 Dependant | 18 to 69 years | | 800 | 12,000 | | | | | | | | | | | 12,800 |
| 2 Deceased | Partner + 1 Dependant | 70 years and over | | 800 | 11,000 | | | | | | | | | | | 11,800 |

Dependant = Dependent Relative
Partner = Spouse/Interdependent Adult Partner
Head = Head of Household
Grief = grief counselling
Principal = principal sum payable

| | | | | Current Benefits Payable | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Survivor | | | | | | | | | | |
| Number of deceased persons | Status of deceased persons | Description 1 | Description 2 | Grief | Principal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total |
| 2 Deceased | Head + 1 Dependant | 0 survivors | 0 partners & 0 dependants | 800 | 12,000 | | | | | | | | | | | 12,800 |
| 2 Deceased | Head + 1 Dependant | 1 survivor | 1 partner & 0 dependants | 800 | 12,000 | 15,000 | | | | | | | | | | 27,800 |
| 2 Deceased | Head + 1 Dependant | 1 survivor | 1 dependant | 800 | 12,000 | 15,000 | | | | | | | | | | 27,800 |
| 2 Deceased | Head + 1 Dependant | 2 survivors | 1 partner & 1 dependants | 800 | 12,000 | 15,000 | 4,000 | | | | | | | | | 31,800 |
| 2 Deceased | Head + 1 Dependant | 2 survivors | 2 dependants | 800 | 12,000 | 15,000 | 6,000 | | | | | | | | | 33,800 |
| 2 Deceased | Head + 1 Dependant | 3 survivors | 1 partner & 2 dependants | 800 | 12,000 | 15,000 | 4,000 | 6,000 | | | | | | | | 37,800 |
| 2 Deceased | Head + 1 Dependant | 3 survivors | 3 dependants | 800 | 12,000 | 15,000 | 6,000 | 6,000 | | | | | | | | 39,800 |
| 2 Deceased | Head + 1 Dependant | 4 survivors | 1 partner & 3 dependants | 800 | 12,000 | 15,000 | 4,000 | 6,000 | 6,000 | | | | | | | 43,800 |
| 2 Deceased | Head + 1 Dependant | 4 survivors | 4 dependants | 800 | 12,000 | 15,000 | 6,000 | 6,000 | 6,000 | | | | | | | 45,800 |
| 2 Deceased | Head + 1 Dependant | 5 survivors | 1 partner & 4 dependants | 800 | 12,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | | | | | | 49,800 |
| 2 Deceased | Head + 1 Dependant | 5 survivors | 5 dependants | 800 | 12,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | | | 51,800 |
| 2 Deceased | Head + 1 Dependant | 6 survivors | 1 partner & 5 dependants | 800 | 12,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | | 55,800 |
| 2 Deceased | Head + 1 Dependant | 6 survivors | 6 dependants | 800 | 12,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | | 57,800 |
| 2 Deceased | Head + 1 Dependant | 7 survivors | 1 partner & 6 dependants | 800 | 12,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | 61,800 |
| 2 Deceased | Head + 1 Dependant | 7 survivors | 7 dependants | 800 | 12,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | 63,800 |
| 2 Deceased | Head + 1 Dependant | 8 survivors | 1 partner & 7 dependants | 800 | 12,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | 67,800 |
| 2 Deceased | Head + 1 Dependant | 8 survivors | 8 dependants | 800 | 12,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | 69,800 |
| 2 Deceased | Head + 1 Dependant | 9 survivors | 1 partner & 8 dependants | 800 | 12,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | 73,800 |
| 2 Deceased | Head + 1 Dependant | 9 survivors | 9 dependants | 800 | 12,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | 75,800 |
| 2 Deceased | Head + 1 Dependant | 10 survivors | 1 partner & 9 dependants | 800 | 12,000 | 15,000 | 4,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 79,800 |
| 2 Deceased | Head + 1 Dependant | 10 survivors | 10 dependants | 800 | 12,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 81,800 |
| 2 Deceased | Head + Partner | 0 survivors | 0 dependant | 800 | 20,000 | | | | | | | | | | | 20,800 |
| 2 Deceased | Head + Partner | 1 survivor | 1 dependant | 800 | 20,000 | 15,000 | | | | | | | | | | 35,800 |
| 2 Deceased | Head + Partner | 2 survivors | 2 dependants | 800 | 20,000 | 15,000 | 6,000 | | | | | | | | | 41,800 |
| 2 Deceased | Head + Partner | 3 survivors | 3 dependants | 800 | 20,000 | 15,000 | 6,000 | 6,000 | | | | | | | | 47,800 |
| 2 Deceased | Head + Partner | 4 survivors | 4 dependants | 800 | 20,000 | 15,000 | 6,000 | 6,000 | 6,000 | | | | | | | 53,800 |
| 2 Deceased | Head + Partner | 5 survivors | 5 dependants | 800 | 20,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | | | 59,800 |
| 2 Deceased | Head + Partner | 6 survivors | 6 dependants | 800 | 20,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | | 65,800 |
| 2 Deceased | Head + Partner | 7 survivors | 7 dependants | 800 | 20,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | | 71,800 |
| 2 Deceased | Head + Partner | 8 survivors | 7 dependants | 800 | 20,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | | 77,800 |
| 2 Deceased | Head + Partner | 9 survivors | 9 dependants | 800 | 20,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | | 83,800 |
| 2 Deceased | Head + Partner | 10 survivors | 10 dependants | 800 | 20,000 | 15,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 89,800 |

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# APPENDIX 1.3

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Medical/Rehabilitation Expense

**Loss Cost (including ALAE; excluding ULAE ,Health Levy and CAT)**

| | | |
|---|---|---|
| 2018 Earned Exposure | 2,746,098 | |
| Frequency Assumption | 1.030% | |
| Expected Number of Claims | 28,285 | |
| Selected | 28,300 | 141.5 |

Model 1

| Injury Type | (1) Estimated 2018 # Claimants | (2) Average Duration (Months) | (3) Average Claim Size | (4) Untrended Undisc. Total Dollars | (5) 2018 Earned Vehicle | (6) Trended Undisc. Total Loss Cost | (7) Trended Disc. Total Loss Cost |
|---|---|---|---|---|---|---|---|
| Type 1 | 18,394 | 8.1 | 1,736 | 31,932,581 | 2,746,098 | 14.64 | 14.59 |
| Type 2S | 7,641 | 24.0 | 5,096 | 38,938,079 | 2,746,098 | 17.85 | 17.73 |
| Type 2L | 2,123 | 60.0 | 10,668 | 22,649,105 | 2,746,098 | 10.38 | 10.24 |
| Type 3 | 142 | 77.0 | 500,000 | 71,000,000 | 2,746,098 | 27.55 | 26.92 |
| Total | 28,300 | 16.6 | 5,813 | 164,519,765 | 2,746,098 | 70.43 | 69.48 |

| | | | |
|---|---|---|---|
| (8) Winter Tire Savings Factor | 0.975 | Loaded Loss Cost | 72.10 |
| (9) Uncertainty Load | 1.050 | Loaded Disc. Loss Cost | 71.13 |

Note:

(1) Based on the selected expected number of claims and selected injury type distribution.
(2) See page 2.
(3) See page 3.
(4) = (3) x (1)
(5) AY 2018 Accident Benefits earned vehicles from GISA report .
(6) See page 2. Figures here are trended to Jul 1, 2018 with ALAE loading.
(7) See page 2. Figures here are trended to Jul 1, 2018 with ALAE loading.
(8) Judgmentally selected
(9) Judgmentally selected

**Model 1 Loss Cost (including ALAE; excluding ULAE ,Health Levy and CAT) up to 5 Years and Beyond 5 Years**

| | AY 2016 trended to 2018 | | Type 1a | Type 1b | Type 1c | Type 2S | Type 2L | Type 3 | Total | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| (1) | Distribution | | 9.0% | 43.0% | 13.0% | 27.0% | 7.5% | 0.5% | 100.0% | Page 3 row (8) |
| (2) | Severity (Loss) | | 936 | 1,865 | 3,402 | 5,999 | 12,559 | 500,000 | | Page 3 row (16) |
| (3) | ALAE Factor | 7.00% | | | | | | | | Page 7 |
| (4) | Severity (Loss & ALAE) | = (2) x [1 + (3)] | 1,002 | 1,995 | 3,641 | 6,419 | 13,438 | 535,000 | | |
| (5) | Frequency | = 1.03% x (1) | 0.093% | 0.443% | 0.134% | 0.278% | 0.077% | 0.005% | 1.03% | Page 4 |
| (6) | Undiscounted Loss Cost | = (4) x (5) | 0.93 | 8.84 | 4.87 | 17.85 | 10.38 | 27.55 | 70.43 | |
| (7) | Duration (months) | | 3.0 | 8.0 | 12.0 | 24.0 | 60.0 | 77.0 | | Page 3 row (17) |
| (8) | Discounted Loss Cost | | 0.93 | 8.81 | 4.85 | 17.73 | 10.24 | 26.92 | 69.48 | Page 6 |
| | Loss Cost up to 5 years | | | | | | | | | |
| (9) | Undiscounted | | 0.93 | 8.84 | 4.87 | 17.85 | 10.38 | 23.77 | 66.64 | Page 6 |
| (10) | Discounted | | 0.93 | 8.81 | 4.85 | 17.73 | 10.24 | 23.34 | 65.91 | Page 6 |
| | Loss Cost beyond 5 years | | | | | | | | | |
| (11) | Undiscounted | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.78 | 3.78 | Page 6 |
| (12) | Discounted | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.58 | 3.58 | Page 6 |

**Severity and Duration Derivation**

| | | 3 months | 8 months | 12 months | 24 months | no threshold | no threshold | |
|---|---|---|---|---|---|---|---|---|
| | | ≤ $3,500 | ≤ $7,500 | ≤ $12,000 | ≤ $25,000 | ≤ $50,000 | > $50,000 | |
| | **AY 2016** | **Type 1a** | **Type 1b** | **Type 1c** | **Type 2S** | **Type 2L** | **Type 3** | Total |
| | **Untrended (Actual) Medical** | | | | | | | |
| (1) | Incurred Loss (Loss only) | 1,913,485 | 21,922,549 | 10,075,202 | 24,098,701 | 23,033,169 | 2,793,703 | 83,836,809 |
| (2) | Medical Claims Count | 2,406 | 13,840 | 3,486 | 4,729 | 2,159 | 34 | 26,654 |
| (3) | Severity (1) / (2) | 795 | 1,584 | 2,890 | 5,096 | 10,668 | 82,168 | 3,145 |
| | **Number of Months to Close a Claim** | | | | | | | |
| (4) | Average | 2.6 | 5.4 | 10.2 | 18.0 | 27.1 | 29.2 | |
| (5) | Std. Dev. | 0.6 | 1.3 | 1.2 | 3.6 | 3.8 | 7.6 | |
| (6) | **Initial duration (months)** | **3.0** | **8.0** | **12.0** | **24.0** | **60.0** | **180.0** | |
| | | | | | | | Tail starts: 25.0 | |
| | **AY 2016** | **Type 1a** | **Type 1b** | **Type 1c** | **Type 2S** | **Type 2L** | **Type 3** | **Total** |
| | **Distribution based on Claims Count** | | | | | | | |
| (7) | Indication | 9.0% | 51.9% | 13.1% | 17.7% | 8.1% | 0.1% | 100.0% |
| (8) | **Selected** | **9.0%** | **43.0%** | **13.0%** | **27.0%** | **7.5%** | **0.5%** | 100.0% |
| | **Trended Loss only to 2018** | | | | | | | |
| (9) | IL Trended using 8.5% factor | 2,252,602 | 25,807,773 | 11,860,780 | 28,369,593 | 27,115,222 | 3,288,817 | 98,694,787 |
| (10) | Severity (9) / (2) | 936 | 1,865 | 3,402 | 5,999 | 12,559 | 96,730 | 3,703 |
| (11) | (10) x (7) | 85 | 968 | 445 | 1,064 | 1,017 | 123 | 3,703 |
| (12) | (10) x (8) | 84 | 802 | 442 | 1,620 | 942 | 484 | **4,374** |

**Type 3 Severity & Duration**

Type 3 Model 1 is a lifetime benefit with an aggregate limit of $500,000.

For this analysis, we assumed it takes 180 months to close a claim.

Type 3 monthly severity is, (13)= 4,030 = [Type 3 row (10)] / 24

Therefore, the expected model 1 type 3 severity, is (14)= 725,474 = [Type 3 row (10)] + (13) x [180 - 24]

(15) Type 3 severity is $500,000, which is the lower of (14) [$725,474] and aggregate limit [$500,000].

(16) With $500,000 as Type 3 severity, the expected time to close a claim (duration) is 77 months.

| | **Model 1 parameters** | **Type 1a** | **Type 1b** | **Type 1c** | **Type 2S** | **Type 2L** | **Type 3** |
|---|---|---|---|---|---|---|---|
| (16) | **Severity: (10) and (15)** | 936 | 1,865 | 3,402 | 5,999 | 12,559 | 500,000 |
| (17) | **Duration: (6) and (16)** | 3.0 | 8.0 | 12.0 | 24.0 | 60.0 | 77.0 |

## Frequency Derivation

Source: ALTA.PPAxF ILDF Triangles 2018-2

| | Ultimate Claim Count | Car Years Earned | % Ult Freq | Weights |
|---|---|---|---|---|
| 2016 | 26,558 | 2,677,526 | 0.99% | |
| 2017 | 27,923 | 2,692,207 | 1.04% | 40.00% |
| 2018 | 28,002 | 2,746,098 | 1.02% | 60.00% |

| | |
|---|---|
| Weighted Average | 1.03% |
| **Selected Frequency** | **1.03%** |

**Payment Pattern**

| | Payment Pattern | | | | | |
|---|---|---|---|---|---|---|
| Month | **Type 1a** | **Type 1b** | **Type 1c** | **Type 2S** | **Type 2L** | **Type 3** |
| 1 | 8.72% | 3.22% | 1.89% | 1.12% | 0.61% | 0.06% |
| 2 | 48.98% | 20.84% | 12.35% | 7.72% | 4.10% | 1.88% |
| 3 | 100.00% | 45.16% | 29.14% | 18.10% | 9.79% | 5.78% |
| 4 | | 73.55% | 45.92% | 28.57% | 16.09% | 8.81% |
| 5 | | 86.99% | 57.23% | 36.52% | 20.94% | 11.47% |
| 6 | | 93.81% | 66.14% | 42.96% | 25.32% | 13.44% |
| 7 | | 97.67% | 73.71% | 49.11% | 29.80% | 14.73% |
| 8 | | 100.00% | 79.98% | 54.42% | 33.53% | 18.45% |
| 9 | | | 88.04% | 59.33% | 38.12% | 20.74% |
| 10 | | | 93.54% | 64.10% | 41.73% | 22.98% |
| 11 | | | 97.23% | 68.39% | 44.90% | 26.13% |
| 12 | | | 100.00% | 72.24% | 48.35% | 28.68% |
| 13 | | | | 76.61% | 52.21% | 32.77% |
| 14 | | | | 80.62% | 55.07% | 36.10% |
| 15 | | | | 83.87% | 58.33% | 39.95% |
| 16 | | | | 86.73% | 61.06% | 41.81% |
| 17 | | | | 89.07% | 63.86% | 43.10% |
| 18 | | | | 91.30% | 66.91% | 46.37% |
| 19 | | | | 93.32% | 69.56% | 47.99% |
| 20 | | | | 95.07% | 72.40% | 50.17% |
| 21 | | | | 96.74% | 75.03% | 51.04% |
| 22 | | | | 97.97% | 77.72% | 54.41% |
| 23 | | | | 99.04% | 80.65% | 55.56% |
| 24 | | | | 100.00% | 83.87% | 57.18% |
| 25 | | | | | 84.32% | 57.99% |
| 26 | | | | | 84.76% | 58.80% |
| 27 | | | | | 85.21% | 59.61% |
| 28 | | | | | 85.66% | 60.41% |
| 29 | | | | | 86.11% | 61.22% |
| 30 | | | | | 86.56% | 62.03% |
| 31 | | | | | 87.00% | 62.84% |
| 32 | | | | | 87.45% | 63.64% |
| 33 | | | | | 87.90% | 64.45% |
| 34 | | | | | 88.35% | 65.26% |
| 35 | | | | | 88.80% | 66.07% |
| 36 | | | | | 89.25% | 66.88% |
| 37 | | | | | 89.69% | 67.68% |
| 38 | | | | | 90.14% | 68.49% |
| 39 | | | | | 90.59% | 69.30% |
| 40 | | | | | 91.04% | 70.11% |
| 41 | | | | | 91.49% | 70.92% |
| 42 | | | | | 91.93% | 71.72% |
| 43 | | | | | 92.38% | 72.53% |
| 44 | | | | | 92.83% | 73.34% |
| 45 | | | | | 93.28% | 74.15% |
| 46 | | | | | 93.73% | 74.96% |
| 47 | | | | | 94.17% | 75.76% |
| 48 | | | | | 94.62% | 76.57% |
| 49 | | | | | 95.07% | 77.38% |
| 50 | | | | | 95.52% | 78.19% |
| 51 | | | | | 95.97% | 78.99% |
| 52 | | | | | 96.42% | 79.80% |
| 53 | | | | | 96.86% | 80.61% |
| 54 | | | | | 97.31% | 81.42% |
| 55 | | | | | 97.76% | 82.23% |
| 56 | | | | | 98.21% | 83.03% |
| 57 | | | | | 98.66% | 83.84% |
| 58 | | | | | 99.10% | 84.65% |
| 59 | | | | | 99.55% | 85.46% |
| 60 | | | | | 100.00% | 86.27% |
| 61 | | | | | | 87.07% |
| 62 | | | | | | 87.88% |
| 63 | | | | | | 88.69% |
| 64 | | | | | | 89.50% |
| 65 | | | | | | 90.31% |
| 66 | | | | | | 91.11% |
| 67 | | | | | | 91.92% |
| 68 | | | | | | 92.73% |
| 69 | | | | | | 93.54% |
| 70 | | | | | | 94.34% |
| 71 | | | | | | 95.15% |
| 72 | | | | | | 95.96% |
| 73 | | | | | | 96.77% |
| 74 | | | | | | 97.58% |
| 75 | | | | | | 98.38% |
| 76 | | | | | | 99.19% |
| 77 | | | | | | 100.00% |

**Undiscounted and Discounted payments**

Annual rate 1.000%
Monthly rate 0.083%

| | Duration (months) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 8 | 12 | 24 | 60 | 77 | | | | | | | |
| | Undiscounted Loss Cost | | | | | | | Discounted Loss Cost | | | | | |
| | 0.93 | 8.84 | 4.87 | 17.85 | 10.38 | 27.55 | | 0.93 | 8.81 | 4.85 | 17.73 | 10.24 | 26.92 |
| Month | **Type 1a** | **Type 1b** | **Type 1c** | **Type 2S** | **Type 2L** | **Type 3** | **Discount factor** | **Type 1a** | **Type 1b** | **Type 1c** | **Type 2S** | **Type 2L** | **Type 3** |
| 1 | 0.08 | 0.28 | 0.09 | 0.20 | 0.064 | 0.017 | 0.9996 | 0.08 | 0.28 | 0.09 | 0.20 | 0.064 | 0.017 |
| 2 | 0.37 | 1.56 | 0.51 | 1.18 | 0.362 | 0.502 | 0.9988 | 0.37 | 1.56 | 0.51 | 1.18 | 0.362 | 0.501 |
| 3 | 0.47 | 2.15 | 0.82 | 1.85 | 0.590 | 1.075 | 0.9979 | 0.47 | 2.14 | 0.82 | 1.85 | 0.589 | 1.073 |
| 4 | | 2.51 | 0.82 | 1.87 | 0.655 | 0.833 | 0.9971 | | 2.50 | 0.82 | 1.86 | 0.653 | 0.831 |
| 5 | | 1.19 | 0.55 | 1.42 | 0.503 | 0.733 | 0.9963 | | 1.18 | 0.55 | 1.41 | 0.501 | 0.730 |
| 6 | | 0.60 | 0.43 | 1.15 | 0.455 | 0.543 | 0.9954 | | 0.60 | 0.43 | 1.14 | 0.453 | 0.540 |
| 7 | | 0.34 | 0.37 | 1.10 | 0.465 | 0.357 | 0.9946 | | 0.34 | 0.37 | 1.09 | 0.462 | 0.355 |
| 8 | | 0.21 | 0.31 | 0.95 | 0.387 | 1.025 | 0.9938 | | 0.20 | 0.30 | 0.94 | 0.385 | 1.019 |
| 9 | | | 0.39 | 0.88 | 0.477 | 0.628 | 0.9930 | | | 0.39 | 0.87 | 0.474 | 0.624 |
| 10 | | | 0.27 | 0.85 | 0.374 | 0.619 | 0.9922 | | | 0.27 | 0.84 | 0.371 | 0.614 |
| 11 | | | 0.18 | 0.77 | 0.329 | 0.868 | 0.9913 | | | 0.18 | 0.76 | 0.326 | 0.860 |
| 12 | | | 0.13 | 0.69 | 0.359 | 0.703 | 0.9905 | | | 0.13 | 0.68 | 0.356 | 0.696 |
| 13 | | | | 0.78 | 0.400 | 1.125 | 0.9897 | | | | 0.77 | 0.396 | 1.114 |
| 14 | | | | 0.71 | 0.297 | 0.919 | 0.9889 | | | | 0.71 | 0.293 | 0.909 |
| 15 | | | | 0.58 | 0.339 | 1.060 | 0.9880 | | | | 0.57 | 0.335 | 1.048 |
| 16 | | | | 0.51 | 0.283 | 0.511 | 0.9872 | | | | 0.50 | 0.280 | 0.504 |
| 17 | | | | 0.42 | 0.291 | 0.356 | 0.9864 | | | | 0.41 | 0.287 | 0.351 |
| 18 | | | | 0.40 | 0.316 | 0.901 | 0.9856 | | | | 0.39 | 0.311 | 0.888 |
| 19 | | | | 0.36 | 0.276 | 0.446 | 0.9848 | | | | 0.36 | 0.272 | 0.440 |
| 20 | | | | 0.31 | 0.294 | 0.602 | 0.9840 | | | | 0.31 | 0.289 | 0.593 |
| 21 | | | | 0.30 | 0.273 | 0.238 | 0.9831 | | | | 0.29 | 0.268 | 0.234 |
| 22 | | | | 0.22 | 0.280 | 0.929 | 0.9823 | | | | 0.21 | 0.275 | 0.913 |
| 23 | | | | 0.19 | 0.304 | 0.317 | 0.9815 | | | | 0.19 | 0.299 | 0.311 |
| 24 | | | | 0.17 | 0.334 | 0.447 | 0.9807 | | | | 0.17 | 0.327 | 0.438 |
| 25 | | | | | 0.047 | 0.223 | 0.9799 | | | | | 0.046 | 0.218 |
| 26 | | | | | 0.047 | 0.223 | 0.9791 | | | | | 0.046 | 0.218 |
| 27 | | | | | 0.047 | 0.223 | 0.9783 | | | | | 0.046 | 0.218 |
| 28 | | | | | 0.047 | 0.223 | 0.9775 | | | | | 0.045 | 0.218 |
| 29 | | | | | 0.047 | 0.223 | 0.9766 | | | | | 0.045 | 0.217 |
| 30 | | | | | 0.047 | 0.223 | 0.9758 | | | | | 0.045 | 0.217 |
| 31 | | | | | 0.047 | 0.223 | 0.9750 | | | | | 0.045 | 0.217 |
| 32 | | | | | 0.047 | 0.223 | 0.9742 | | | | | 0.045 | 0.217 |
| 33 | | | | | 0.047 | 0.223 | 0.9734 | | | | | 0.045 | 0.217 |
| 34 | | | | | 0.047 | 0.223 | 0.9726 | | | | | 0.045 | 0.216 |
| 35 | | | | | 0.047 | 0.223 | 0.9718 | | | | | 0.045 | 0.216 |
| 36 | | | | | 0.047 | 0.223 | 0.9710 | | | | | 0.045 | 0.216 |
| 37 | | | | | 0.047 | 0.223 | 0.9702 | | | | | 0.045 | 0.216 |
| 38 | | | | | 0.047 | 0.223 | 0.9694 | | | | | 0.045 | 0.216 |
| 39 | | | | | 0.047 | 0.223 | 0.9686 | | | | | 0.045 | 0.216 |
| 40 | | | | | 0.047 | 0.223 | 0.9678 | | | | | 0.045 | 0.215 |
| 41 | | | | | 0.047 | 0.223 | 0.9670 | | | | | 0.045 | 0.215 |
| 42 | | | | | 0.047 | 0.223 | 0.9662 | | | | | 0.045 | 0.215 |
| 43 | | | | | 0.047 | 0.223 | 0.9654 | | | | | 0.045 | 0.215 |
| 44 | | | | | 0.047 | 0.223 | 0.9646 | | | | | 0.045 | 0.215 |
| 45 | | | | | 0.047 | 0.223 | 0.9638 | | | | | 0.045 | 0.215 |
| 46 | | | | | 0.047 | 0.223 | 0.9630 | | | | | 0.045 | 0.214 |
| 47 | | | | | 0.047 | 0.223 | 0.9622 | | | | | 0.045 | 0.214 |
| 48 | | | | | 0.047 | 0.223 | 0.9614 | | | | | 0.045 | 0.214 |
| 49 | | | | | 0.047 | 0.223 | 0.9606 | | | | | 0.045 | 0.214 |
| 50 | | | | | 0.047 | 0.223 | 0.9598 | | | | | 0.045 | 0.214 |
| 51 | | | | | 0.047 | 0.223 | 0.9590 | | | | | 0.045 | 0.213 |
| 52 | | | | | 0.047 | 0.223 | 0.9582 | | | | | 0.045 | 0.213 |
| 53 | | | | | 0.047 | 0.223 | 0.9574 | | | | | 0.045 | 0.213 |
| 54 | | | | | 0.047 | 0.223 | 0.9566 | | | | | 0.045 | 0.213 |
| 55 | | | | | 0.047 | 0.223 | 0.9558 | | | | | 0.044 | 0.213 |
| 56 | | | | | 0.047 | 0.223 | 0.9550 | | | | | 0.044 | 0.213 |
| 57 | | | | | 0.047 | 0.223 | 0.9542 | | | | | 0.044 | 0.212 |
| 58 | | | | | 0.047 | 0.223 | 0.9534 | | | | | 0.044 | 0.212 |
| 59 | | | | | 0.047 | 0.223 | 0.9526 | | | | | 0.044 | 0.212 |
| 60 | | | | | 0.047 | 0.223 | 0.9519 | | | | | 0.044 | 0.212 |
| 61 | | | | | | 0.223 | 0.9511 | | | | | | 0.212 |
| 62 | | | | | | 0.223 | 0.9503 | | | | | | 0.212 |
| 63 | | | | | | 0.223 | 0.9495 | | | | | | 0.211 |
| 64 | | | | | | 0.223 | 0.9487 | | | | | | 0.211 |
| 65 | | | | | | 0.223 | 0.9479 | | | | | | 0.211 |
| 66 | | | | | | 0.223 | 0.9471 | | | | | | 0.211 |
| 67 | | | | | | 0.223 | 0.9464 | | | | | | 0.211 |
| 68 | | | | | | 0.223 | 0.9456 | | | | | | 0.210 |
| 69 | | | | | | 0.223 | 0.9448 | | | | | | 0.210 |
| 70 | | | | | | 0.223 | 0.9440 | | | | | | 0.210 |
| 71 | | | | | | 0.223 | 0.9432 | | | | | | 0.210 |
| 72 | | | | | | 0.223 | 0.9424 | | | | | | 0.210 |
| 73 | | | | | | 0.223 | 0.9417 | | | | | | 0.210 |
| 74 | | | | | | 0.223 | 0.9409 | | | | | | 0.209 |
| 75 | | | | | | 0.223 | 0.9401 | | | | | | 0.209 |
| 76 | | | | | | 0.223 | 0.9393 | | | | | | 0.209 |
| 77 | | | | | | 0.223 | 0.9385 | | | | | | 0.209 |

**Derivation of Accident Benefits ALAE Factor**

Major Coverage AB
Valuation Year 201812

| Accident half year | Paid Loss | | | Case Reserve | | | | Claim Count | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Loss Amount | Expense Amount | Total Paid Loss | Loss Amount | Expense Amount | Total Case Reserves | Total IL | Open | Closed | Total |
| 201601 | 49,538,805 | 3,436,250 | 52,975,055 | 1,143,820 | 88,918 | 1,232,738 | 54,207,793 | 13,565 | 17 | 13,582 |
| 201602 | 63,629,782 | 4,206,430 | 67,836,212 | 3,558,792 | 221,622 | 3,780,414 | 71,616,626 | 16,035 | 26 | 16,061 |
| 201701 | 54,962,823 | 4,471,615 | 59,434,438 | 10,640,318 | 461,122 | 11,101,440 | 70,535,878 | 14,894 | 61 | 14,955 |
| 201702 | 54,615,676 | 4,447,200 | 59,062,876 | 15,557,421 | 975,750 | 16,533,171 | 75,596,047 | 16,034 | 122 | 16,156 |
| 201801 | 43,447,966 | 2,893,391 | 46,341,357 | 29,335,204 | 1,562,400 | 30,897,604 | 77,238,961 | 15,392 | 337 | 15,729 |
| 201802 | 15,826,008 | 1,059,859 | 16,885,867 | 61,584,771 | 2,414,171 | 63,998,942 | 80,884,809 | 10,240 | 5,839 | 16,079 |

| GISA Accident Year | Paid Loss | | | Case Reserve | | | | Claim Count | | | IL Expense / IL Loss |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Loss Amount | Expense Amount | Total Paid Loss | Loss Amount | Expense Amount | Total Case Reserves | Total IL | Open | Closed | Total | |
| 2016 | 113,168,587 | 7,642,680 | 120,811,267 | 4,702,612 | 310,540 | 5,013,152 | 125,824,419 | 29,600 | 43 | 29,643 | 6.75% |
| 2017 | 109,578,499 | 8,918,815 | 118,497,314 | 26,197,739 | 1,436,872 | 27,634,611 | 146,131,925 | 30,928 | 183 | 31,111 | 7.63% |
| 2018 | 59,273,974 | 3,953,250 | 63,227,224 | 90,919,975 | 3,976,571 | 94,896,546 | 158,123,770 | 25,632 | 6,176 | 31,808 | 5.28% |

| | |
|---|---|
| Indicated ALAE Ratio | 6.55% |
| Selected ALAE Ratio | 7.00% |

# APPENDIX 1.4

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Certified Attendant Care or Homecare Expense

**Certified Attendant Care Benefit**

**Loss Cost (including ALAE; excluding ULAE, Health Levy and CAT)**

Model 1

| Injury Type | (1) Estimated 2018 # Claimants | (2) Average Duration (Months) | (3) Average Monthly Amount | (4) Undisc. Total Dollars | (5) Discounted 1.0% Total Dollars | (6) 2018 Earned Vehicle | (7) Undisc. Total Loss Cost | (8) Disc. Total Loss Cost |
|---|---|---|---|---|---|---|---|---|
| Type 1 | | | | | | | | |
| Type 2S | 723 | 8.2 | 1,000 | 5,902,000 | 5,877,278 | 2,746,098 | 2.15 | 2.14 |
| Type 2L | 494 | 28.8 | 1,000 | 14,205,000 | 13,991,417 | 2,746,098 | 5.17 | 5.10 |
| Type 3 | 19 | 76.7 | 4,078 | 5,945,000 | 5,773,741 | 2,746,098 | 2.16 | 2.10 |
| Total | 1,236 | | | 26,052,000 | 25,642,435 | 2,746,098 | 9.49 | 9.34 |

| | | | |
|---|---|---|---|
| (9) Data Adjustment Load | 1.000 | | |
| (10) Winter Tire Savings Factor | 0.975 | | |
| (11) ALAE Load | 1.070 | Loaded Loss Cost | 10.39 |
| (12) Uncertainty Load | 1.050 | Loaded Disc. Loss Cost | 10.23 |

Note:

(1) Not applicable to Injury Type 1. Injury type distribution is based on Disability Income claims distribution.
(2) Based on cash flow
(3) = (4) / [(1) x (2)]
(4) Based on cash flow
(5) Based on cash flow
(6) AY 2018 Accident Benefits earned vehicles from GISA report .
(7) = (4) / (6)
(8) = (5) / (6)
(9) Not Applicable
(10) Judgmentally selected
(11) Based on three-year weighted average of GISA Accident Benefit data
(12) Judgmentally selected

**Alberta**
**Automobile Accident Insurance Benefits**
**Certified Attendant Care Benefit**

**Description of Benefit**

| Type | Medical Indicated | Disability & Medicall Indicated | ADJ. Medical | ADJ. Disability & Medicall | % | Claim Count | Monthly Benefit 1st 6 months | 7-24 months | Thereafter | Aggregate Limit | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1a | 9.0% | 4.5% | | | | | | | | | |
| 1b | 51.9% | 27.7% | | | | | | | | | |
| 1c | 13.1% | 13.8% | | | | | | | | | |
| 2Sa | | | | | 20.5% | 253 | 1,000 | | | 6,000 | |
| 2La | | | | | 6.0% | 74 | 1,000 | | | 6,000 | |
| 2Sb | 17.7% | 31.6% | 68.3% | 58.6% | 38.0% | 470 | 1,000 | 1,000 | 1,000 | 60,000 | |
| 2Lb | 8.1% | 21.6% | 31.2% | 40.2% | 34.0% | 420 | 1,000 | 1,000 | 1,000 | 60,000 | (to maximum 60m) |
| 3 | 0.1% | 0.7% | 0.5% | 1.3% | 1.5% | 19 | 6,000 | 6,000 | 3,000 | 500,000 | |
| Total | | | | | 100.0% | 1,236 | | | | | |

2S and L are further split into categories a and b; category a is capped at 6 months

**Discount rate**

1.0%

| Exposure | Frequency Assumption | Expected Number of Claims |
|---|---|---|
| 2,746,098 (2018 Earned) | 0.045% (based on Ontario Experience) | 1,236 |

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# APPENDIX 1.5

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IRB for Wage Earners

**Loss Cost (including ALAE; excluding ULAE, Health Levy and CAT)**

| | | |
|---|---|---|
| 2018 Earned Exposure | 2,746,098 | |
| Frequency Assumption | 0.109% | (based on last 9 years) |
| Expected Number of WB Claims | 2,985 | |
| Expected Number of Non-Earner Claims | 100 | |
| Expected Number of Earner Claims | 2,885 | |
| Selected | 2,900 | |

Model 1

| Injury Type | (1) Estimated 2018 # Claimants | (2) Average Duration | (3) Average Monthly Amount | (4) Undisc. Total Dollars | (5) Discounted 1.0% Total Dollars | (6) 2018 Earned Vehicle | (7) Undisc. Total Loss Cost | (8) Disc. Total Loss Cost |
|---|---|---|---|---|---|---|---|---|
| Type 1 | 1,338 | 3.1 | 2,190 | 9,206,040 | 9,024,460 | 2,746,098 | 3.35 | 3.29 |
| Type 2S | 919 | 8.7 | 1,550 | 12,459,904 | 12,350,014 | 2,746,098 | 4.54 | 4.50 |
| Type 2L | 622 | 13.4 | 1,528 | 12,714,618 | 12,604,127 | 2,746,098 | 4.63 | 4.59 |
| Type 3 | 21 | 346.5 | 1,026 | 7,467,230 | 6,367,057 | 2,746,098 | 2.72 | 2.32 |
| Total | 2,900 | 9.9 | 1,456 | 41,847,792 | 40,345,658 | 2,746,098 | 15.24 | 14.69 |

| | | | |
|---|---|---|---|
| (9) Data Adjustment Load | 1.057 | | |
| (10) Balance Back Factor | 1.150 | | |
| (11) ALAE Load | 1.070 | | |
| (12) Winter Tire Savings Factor | 0.975 | Loaded Loss Cost | 20.29 |
| (13) Uncertainty Load | 1.050 | Loaded Disc. Loss Cost | 19.56 |

Note:

(1) Based on the selected expected number of claims and selected injury type distribution. Please refer to page 2 for injury type distibution.
(2) See page 3.
(3) = (4) / ((1) x (2))
(4) = simulated severity x (1). Please refer to page 3 for simulated undiscounted severity.
(5) = simulated discounted severity x (1). Please refer to page 3 for simulated discounted severity.
(6) AY 2018 Accident Benefits earned vehicles from GISA report .
(7) = (4) / (6)
(8) = (5) / (6)
(9) Data is capped and excludes IBNR and large losses.
This factor is to allow the simulated results to be on the same basis as GISA AY 2016.
(10) The simulated severity was calibrated using AY 2016 as the starting point.
This factor is to allow the simulated results to be on the same basis as the current GISA model.
(11) Based on AY2016 ALAE and Losses disability data.
(12) Judgmentally selected.
(13) Judgmentally selected.

**Alberta**
**Automobile Accident Insurance Benefits**
**Income Replacement Benefit for Wage Earners**

**Simulation Validation**

Within Simulated Claims:

| | | | |
|---|---|---|---|
| Average Gross Income | 57,234 | Average Weekly Benefit | 355 |
| Median Gross Income | 55,000 | % Weekly Benefit =$400 | 62% |
| % With LTD | 72% | % With STD | 32% |

| Simulated Claim Profile | | | | | |
|---|---|---|---|---|---|
| Age | | % Count | Gross Income | | % Count |
| <20 | | 0.0% | <10000 | | 0.0% |
| 20 | 24 | 8.4% | 10,000 | 19,999 | 13.1% |
| 25 | 29 | 15.8% | 20,000 | 29,999 | 11.3% |
| 30 | 34 | 15.0% | 30,000 | 39,999 | 11.0% |
| 35 | 39 | 11.8% | 40,000 | 49,999 | 11.0% |
| 40 | 44 | 12.0% | 50,000 | 59,999 | 9.4% |
| 45 | 49 | 10.0% | 60,000 | 69,999 | 8.2% |
| 50 | 54 | 10.2% | 70,000 | 79,999 | 7.0% |
| 55 | 59 | 6.7% | 80,000 | 89,999 | 5.6% |
| 60 | 64 | 6.9% | 90,000 | 99,999 | 5.2% |
| >=65 | | 3.4% | >=100000 | | 18.3% |

| Observed - Closed Claim Study | | | | | |
|---|---|---|---|---|---|
| Age | | % Count | Gross Income | | % Count |
| <20 | | 7.4% | <10000 | | 4.9% |
| 20 | 24 | 14.1% | 10,000 | 19,999 | 9.3% |
| 25 | 29 | 13.4% | 20,000 | 29,999 | 23.9% |
| 30 | 34 | 9.8% | 30,000 | 39,999 | 18.8% |
| 35 | 39 | 10.1% | 40,000 | 49,999 | 11.3% |
| 40 | 44 | 11.4% | 50,000 | 59,999 | 8.2% |
| 45 | 49 | 11.2% | 60,000 | 69,999 | 7.0% |
| 50 | 54 | 9.6% | 70,000 | 79,999 | 6.6% |
| 55 | 59 | 6.9% | 80,000 | 89,999 | 2.7% |
| 60 | 64 | 3.8% | 90,000 | 99,999 | 1.9% |
| >=65 | | 2.2% | >=100000 | | 5.4% |

| Simulated | | | |
|---|---|---|---|
| Model 5 | Severity | Duration (Months) | Weekly Benefit |
| Average | 9,974 | 6.6 | 355 |
| Percentile | | | |
| 10% | 1,333 | 0.8 | 263 |
| 20% | 1,333 | 0.8 | 278 |
| 30% | 3,067 | 1.8 | 344 |
| 40% | 3,498 | 2.8 | 400 |
| 50% | 4,808 | 3.8 | 400 |
| 60% | 8,267 | 5.8 | 400 |
| 70% | 11,733 | 7.8 | 400 |
| 80% | 16,933 | 10.8 | 400 |
| 90% | 27,398 | 19.8 | 400 |
| 95% | 36,000 | 24.0 | 400 |
| 99% | 41,600 | 24.0 | 400 |

| Observed | | | |
|---|---|---|---|
| AY2016 | Severity | Duration (Months) | Weekly Benefit |
| Average | 9,986 | 6.1 | 347 |
| Percentile | | | |
| 10% | 669 | 0.5 | 265 |
| 20% | 1,250 | 0.9 | 308 |
| 30% | 2,025 | 1.4 | 342 |
| 40% | 3,064 | 2.0 | 363 |
| 50% | 4,229 | 2.8 | 383 |
| 60% | 6,086 | 4.1 | 400 |
| 70% | 10,000 | 6.5 | 400 |
| 80% | 17,099 | 11.5 | 400 |
| 90% | 33,789 | 22.1 | 400 |
| 95% | 41,450 | 24.0 | 400 |
| 99% | 41,600 | 24.0 | 400 |

| Average by Claim Type (Simulated) | | | | |
|---|---|---|---|---|
| Model 5 | Severity | Duration (Months) | Weekly Benefit | % of all claims |
| Type 1a | 3,480 | 2.3 | 355 | 4.5% |
| Type 1b | 3,967 | 2.6 | 358 | 27.5% |
| Type 1c | 6,698 | 4.4 | 359 | 14.0% |
| Type 2S | 11,481 | 7.6 | 353 | 31.5% |
| Type 2L | 17,867 | 11.9 | 350 | 21.7% |
| Type 3 | 36,707 | 24.0 | 353 | 0.8% |

| Average by Claim Type (Observed) | | | | |
|---|---|---|---|---|
| AY2016 | Severity | Duration (Months) | Weekly Benefit | % of all claims |
| Type 1a | 2,413 | 1.7 | 334 | 4.6% |
| Type 1b | 3,569 | 2.3 | 343 | 27.8% |
| Type 1c | 6,442 | 4.2 | 343 | 13.9% |
| Type 2S | 11,984 | 7.6 | 350 | 31.7% |
| Type 2L | 17,810 | 11.1 | 357 | 21.4% |
| Type 3 | 36,907 | 22.0 | 378 | 0.7% |

**Alberta**
**Automobile Accident Insurance Benefits**
**Income Replacement Benefit for Wage Earners**

**Simulation Summary by Model**

| Current Model | | | | |
|---|---|---|---|---|
| | Undiscounted Severity | Discounted Severity | Duration (Months) | Weekly Benefit |
| Average | 9,974 | 9,903 | 6.6 | 355 |
| Perc. | | | | |
| 10% | 1,333 | 1,324 | 0.8 | 263 |
| 20% | 1,333 | 1,324 | 0.8 | 278 |
| 30% | 3,067 | 3,050 | 1.8 | 344 |
| 40% | 3,498 | 3,479 | 2.8 | 400 |
| 50% | 4,808 | 4,783 | 3.8 | 400 |
| 60% | 8,267 | 8,224 | 5.8 | 400 |
| 70% | 11,733 | 11,673 | 7.8 | 400 |
| 80% | 16,933 | 16,847 | 10.8 | 400 |
| 90% | 27,398 | 27,134 | 19.8 | 400 |
| 95% | 36,000 | 35,644 | 24.0 | 400 |
| 99% | 41,600 | 41,189 | 24.0 | 400 |

| Model 1 | | | | |
|---|---|---|---|---|
| | Undiscounted Severity | Discounted Severity | Duration (Months) | Weekly Benefit |
| Average | 14,430 | 13,912 | 9.9 | 451 |
| Perc. | | | | |
| 10% | 1,030 | 1,023 | 0.8 | 163 |
| 20% | 1,950 | 1,937 | 0.8 | 205 |
| 30% | 3,008 | 2,992 | 1.8 | 264 |
| 40% | 3,992 | 3,971 | 2.8 | 297 |
| 50% | 6,505 | 6,469 | 3.8 | 343 |
| 60% | 9,021 | 8,973 | 5.8 | 403 |
| 70% | 13,279 | 13,211 | 7.8 | 562 |
| 80% | 20,366 | 20,261 | 10.8 | 730 |
| 90% | 29,582 | 29,398 | 19.8 | 1,000 |
| 95% | 41,014 | 40,649 | 28.8 | 1,000 |
| 99% | 97,205 | 95,460 | 56.8 | 1,000 |

| Average by Claim Type (Simulated) | | | | |
|---|---|---|---|---|
| Model 5 | Undiscounted Severity | Discounted Severity | Duration (Months) | Weekly Benefit |
| Type 1a | 3,480 | 3,458 | 2.3 | 355 |
| Type 1b | 3,967 | 3,944 | 2.6 | 358 |
| Type 1c | 6,698 | 6,656 | 4.4 | 359 |
| Type 2S | 11,481 | 11,396 | 7.6 | 353 |
| Type 2L | 17,867 | 17,734 | 11.9 | 350 |
| Type 3 | 36,707 | 36,346 | 24.0 | 353 |

| Average by Claim Type (Simulated) | | | | |
|---|---|---|---|---|
| Model 1 | Undiscounted Severity | Discounted Severity | Duration (Months) | Weekly Benefit |
| Type 1a | 4,628 | 4,599 | 2.3 | 481 |
| Type 1b | 5,286 | 5,255 | 2.6 | 496 |
| Type 1c | 8,455 | 8,400 | 4.5 | 483 |
| Type 2S | 13,558 | 13,439 | 8.7 | 436 |
| Type 2L | 20,442 | 20,264 | 13.4 | 398 |
| Type 3 | 355,582 | 303,193 | 346.5 | 233 |

**Alberta**
**Automobile Accident Insurance Benefits**
**Income Replacement Benefit for Wage Earners**

**Weekly Benefit Summary**

**Assumptions:**

Only people with more than $30k employment income shall have 95% chance to have group benefit
About 73% of all claimants have LTD benefit
LTD coverage level is 66%

| | | | | Group Benefits | IRB Weekly Benefits (Current) | | |
|---|---|---|---|---|---|---|---|
| Gross Income Group | Gross Income used | Gross Weekly Earnings | 80% of GWE | 66% of GWE | Without Group Benefit | With Group Benefit | Group Benefit + IRB |
| $5,000 to $9,999 | | | | | | | |
| $10,000 to $14,999 | $12,500 | $240 | $192 | $159 | $192 | | |
| $15,000 to $19,999 | $17,500 | $337 | $269 | $222 | $269 | | |
| $20,000 to $24,999 | $22,500 | $433 | $346 | $286 | $346 | | |
| $25,000 to $29,999 | $27,500 | $529 | $423 | $349 | $400 | | |
| $30,000 to $34,999 | $32,500 | $625 | $500 | $413 | $400 | $246 | $659 |
| $35,000 to $39,999 | $37,500 | $721 | $577 | $476 | $400 | $263 | $739 |
| $40,000 to $44,999 | $42,500 | $817 | $654 | $539 | $400 | $278 | $818 |
| $45,000 to $49,999 | $47,500 | $913 | $731 | $603 | $400 | $291 | $894 |
| $50,000 to $59,999 | $55,000 | $1,058 | $846 | $698 | $400 | $308 | $1,006 |
| $60,000 to $69,999 | $65,000 | $1,250 | $1,000 | $825 | $400 | $400 | $1,225 |
| $70,000 to $79,999 | $75,000 | $1,442 | $1,154 | $952 | $400 | $400 | $1,352 |
| $80,000 to $89,999 | $85,000 | $1,635 | $1,308 | $1,079 | $400 | $400 | $1,479 |
| $90,000 to $99,999 | $95,000 | $1,827 | $1,462 | $1,206 | $400 | $400 | $1,606 |
| $100,000 and over | $100,000 | $1,923 | $1,538 | $1,269 | $400 | $400 | $1,669 |

| | | | | Group Benefits | Weekly Benefit Model 1 | | |
|---|---|---|---|---|---|---|---|
| Gross Income Group | Net Annual Income | Net Weekly Earnings | 90% of NWE | 66% of GWE after tax | Without Group Benefit | With Group Benefit | Group Benefit + IRB |
| $10,000 to $14,999 | $11,838 | $228 | $205 | | $205 | | |
| $15,000 to $19,999 | $16,020 | $308 | $277 | | $277 | | |
| $20,000 to $24,999 | $19,805 | $381 | $343 | | $343 | | |
| $25,000 to $29,999 | $23,303 | $448 | $403 | | $403 | | |
| $30,000 to $34,999 | $26,800 | $515 | $464 | $367 | $464 | $97 | $464 |
| $35,000 to $39,999 | $30,299 | $583 | $524 | $411 | $524 | $113 | $524 |
| $40,000 to $44,999 | $33,797 | $650 | $585 | $456 | $585 | $129 | $585 |
| $45,000 to $49,999 | $37,295 | $717 | $645 | $500 | $645 | $146 | $645 |
| $50,000 to $59,999 | $42,164 | $811 | $730 | $567 | $730 | $163 | $730 |
| $60,000 to $69,999 | $49,023 | $943 | $848 | $655 | $848 | $193 | $848 |
| $70,000 to $79,999 | $55,973 | $1,076 | $969 | $742 | $969 | $227 | $969 |
| $80,000 to $89,999 | $62,923 | $1,210 | $1,089 | $825 | $1,000 | $264 | $1,089 |
| $90,000 to $99,999 | $69,873 | $1,344 | $1,209 | $912 | $1,000 | $297 | $1,209 |
| $100,000 and over | $73,092 | $1,406 | $1,265 | $956 | $1,000 | $309 | $1,265 |

**Current Model Simulated Cashflow**
Based on 10,000 claims

| Period | | Incremental Paid | Cumulative Paid | LDF |
|---|---|---|---|---|
| Waiting Period Adj | | (3,344,495) | | |
| | 1 | 82,396,089 | 79,051,594 | |
| | 2 | 20,691,845 | 99,743,439 | 1.26175 |
| | 3 | - | 99,743,439 | 1.00000 |
| | 4 | - | 99,743,439 | 1.00000 |
| | 5 | - | 99,743,439 | 1.00000 |
| Total after 5 year | | - | | |
| Grand Total | | 99,743,439 | | |

**Model 1 Simulated Cashflow**
Based on 10,000 claims

| Period | | Incremental Paid | Cumulative Paid | LDF |
|---|---|---|---|---|
| Waiting Period Adj | | (4,954,582) | | |
| | 1 | 99,191,980 | 94,237,398 | |
| | 2 | 15,914,427 | 110,151,825 | 1.16888 |
| | 3 | 6,827,409 | 116,979,234 | 1.06198 |
| | 4 | 3,304,581 | 120,283,815 | 1.02825 |
| | 5 | 1,737,985 | 122,021,800 | 1.01445 |
| Total after 5 year | | 22,280,930 | | |
| Grand Total | | 144,302,730 | | |

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# APPENDIX 1.6

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IRB for Non-Wage Earners

**Income Replacement Benefit for Non-Wage Earners**

**Loss Cost (including ALAE; excluding ULAE ,Health Levy and CAT)**

| | | |
|---|---|---|
| 2018 Earned Exposure | 2,746,098 | |
| Frequency Assumption | 0.109% | (based on last 9 years) |
| Expected Number of WB Claims | 2,985 | |
| Expected Number of Non-Earner Claims (current) | 100 | |
| Expected Number of Non-Earner Claims (model 1)* | 725 | |

Model 1

| Injury Type | (1) Estimated 2018 # Claimants | (2) Average Duration | (3) Average Monthly Amount | (4) Undisc. Total Dollars | (5) Discounted 1.0% Total Dollars | (6) 2018 Earned Vehicle | (7) Undisc. Total Loss Cost | (8) Disc. Total Loss Cost |
|---|---|---|---|---|---|---|---|---|
| Type 1 | 38 | 7.0 | 433 | 114,833 | 114,159 | 2,746,098 | 0.04 | 0.04 |
| Type 2S | 92 | 10.8 | 867 | 859,733 | 853,635 | 2,746,098 | 0.31 | 0.31 |
| Type 2L | 125 | 9.2 | 1,300 | 1,488,500 | 1,479,015 | 2,746,098 | 0.54 | 0.54 |
| Type 3 | 6 | 340.5 | 1,540 | 3,145,122 | 2,743,680 | 2,746,098 | 1.15 | 1.00 |
| Total | 261 | | | 5,608,189 | 5,190,488 | 2,746,098 | 2.04 | 1.89 |

| | | | |
|---|---|---|---|
| (9) Data Adjustment Load | 1.000 | | |
| (10) Winter Tire Savings Factor | 0.975 | | |
| (11) ALAE Load | 1.070 | Loaded Loss Cost | 2.24 |
| (12) Uncertainty Load | 1.050 | Loaded Disc. Loss Cost | 2.07 |

Note:

* Based on Ontario experience, the number of non-earner claims has increased under Model 1. It is before the waiting period is applied.

(1) Based on Cash flow. Number of claims in model 1 are censored due to 6 months waiting period.
(2) = (4) / ((1) x (3))
(3) From Input
(4) Based on Cash flow.
(5) Based on Cash flow.
(6) AY 2018 Accident Benefits earned vehicles from GISA report .
(7) = (4) / (6)
(8) = (5) / (6)
(9) Not Applicable
(10) Judgmentally selected
(11) Based on the three year average of GISA disability data for current model.
Based on the three year average of GISA Accident Benefit data for Model 1.
(12) Judgmentally selected

**Alberta**
**Automobile Accident Insurance Benefits**
**Income Replacement Benefit for Non-Wage Earners**

**Description of Benefit**

Current

| Type | Medical Indicated | Disability & Medical Indicated | Selected % | Claim Count | Maximum Weekly Benefit | Panel Assessment | Monthly Benefit 1st 6 months | Monthly Benefit 7-24 months | Maximum Weekly Benefit Thereafter | CPP* Disability | Monthly Benefit Thereafter | Aggregate Limit | Waiting Period (weeks) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1a | 9.0% | 4.5% | 4.5% | 3 | 135 | 100% | 585 | 0 | | 0 | 0 | 3,510 | 0 |
| 1b | 51.9% | 27.7% | 27.7% | 28 | 135 | 100% | 585 | 0 | | 0 | 0 | 3,510 | 0 |
| 1c | 13.1% | 13.8% | 13.8% | 14 | 135 | 100% | 585 | 0 | | 0 | 0 | 3,510 | 0 |
| 2S | 17.7% | 31.6% | 31.6% | 32 | 135 | 100% | 585 | 0 | | 0 | 0 | 3,510 | 0 |
| 2L | 8.1% | 21.6% | 21.6% | 22 | 135 | 100% | 585 | 0 | | 0 | 0 | 3,510 | 0 |
| 3 | 0.1% | 0.7% | 0.7% | 1 | 135 | 100% | 585 | 0 | | 0 | 0 | 3,510 | 0 |
| Total | | | 100.0% | 100 | | | | | | | | | |

Model 1

| Type | Medical Indicated | Disability & Medical Indicated | Selected % | Claim Count | Maximum Weekly Benefit | Panel Assessment | Monthly Benefit 1st 6 months | Monthly Benefit 7-24 months | Maximum Weekly Benefit Thereafter | CPP* Disability | Monthly Benefit Thereafter | Aggregate Limit | Waiting Period (weeks) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1a | | | 4.5% | 30 | 400 | 25% | 433 | 433 | 0 | 1,010 | 0 | 41,600 | 26 |
| 1b | | | 27.7% | 202 | 400 | 25% | 433 | 433 | 0 | 1,010 | 0 | 41,600 | 26 |
| 1c | | | 13.8% | 101 | 400 | 25% | 433 | 433 | 0 | 1,010 | 0 | 41,600 | 26 |
| 2S | | | 31.6% | 229 | 400 | 50% | 867 | 867 | 0 | 1,010 | 0 | 41,600 | 26 |
| 2L | | | 21.6% | 157 | 400 | 75% | 1,300 | 1,300 | 0 | 1,010 | 0 | 41,600 | 26 |
| 3 | | | 0.7% | 6 | 400 | 100% | 1,733 | 1,733 | 585 | 1,010 | 1,525 | Unlimited | 26 |
| Total | | | 100.0% | 725 | | | | | | | | | |

* from government of Canada website

**Discount rate**

1.0%

**Exposure**

2,746,098 (2018 Earned)

Frequency Assumption

0.109% (based on recent 9 years)

Expected Number of Weekly Benefit Claims

2,985

Selected Earners Number of Claims

2,900

Non- Earners Ratio (current model)

3.5% (based on disability data, around 87/2800)

Expected Number of Non- Earner weekly Benefit Claims (current model)

102

Non- Earners Ratio (Model 1)

25.0% (based on Ontario Exp)

Expected Number of Non- Earner Weekly Benefit Claims (Model 1)

725

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# APPENDIX 1.7

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Diminished Quality of Life

## Loss Cost (including ALAE; excluding ULAE, Health Levy and CAT)

### Assumptions (Expected Claim Count)

| | |
|---|---|
| 26,000 | Medical |
| 52.00% | % without Diminished Quality of Life benefits |
| 48.00% | % with Diminished Quality of Life benefits |
| 12,480 | Claim Count with Diminished Quality of Life benefits |

### (Non-zero) Diminished Quality of Life benefits

| | Count (Page 4) | | Benefit (Page 5) | | | |
|---|---|---|---|---|---|---|
| Type | Number | % | Average ($) | Total ($) | CAT[1] Total ($) | CAT[1] Total (%) |
| Minor | 10,864 | 87.05% | 3,035 | 32,968,714 | 0 | 0.00% |
| Medium | 1,135 | 9.09% | 19,245 | 21,834,648 | 0 | 0.00% |
| Severe | 482 | 3.86% | 78,333 | 37,728,988 | 24,082,333 | 26.03% |
| **Total** | **12,480** | **100.00%** | **7,414** | **92,532,350** | **24,082,333** | 26.03% |

### Total Loss Cost

| | | |
|---|---|---|
| Loss (Indemnity) | 92,532,350 | |
| ALAE % | 7.00% | Assumption |
| Loss & ALAE | 99,009,614 | |
| Car Years Earned | 2,746,098 | 2018 Earned Exposure |
| Winter Tire Savings Factor | 0.975 | |
| Uncertainty Load | 1.050 | |
| Undiscounted Loss Cost | **36.91** | |
| | | |
| Duration (years) | 2.00 | Assumption |
| Discount rate | 1.00% | Assumption |
| Discounted Loss Cost | **36.18** | |

Notes:

[1] CAT = rows (12), (30), (33), (34), (37), (39), (41), (43), (45), (47) on page 5

**Alberta**

**Automobile Accident Insurance Benefits**

**Diminished Quality of Life**

**Based on non-zero pain and suffering records only**

| | | | | Actual Data (Current Product) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number of | JSCP | | Count | | | Standard | | |
| Row | Injuries | Ref. | Injury Description | Number | % | Average | Deviation | Minimum | Maximum |
| (1) | N/A | | Unknown injuries | 9 | 0.39% | 50,711 | 66,615 | 1,400 | 220,000 |
| (2) | 1 | a | S or S | 257 | 11.02% | 2,786 | 2,614 | 100 | 25,000 |
| (3) | | b | WAD I | 87 | 3.73% | 2,194 | 1,427 | 250 | 5,020 |
| (4) | | c | WAD II | 599 | 25.69% | 3,979 | 3,255 | 308 | 55,000 |
| (5) | | d | WAD III | 18 | 0.77% | 7,242 | 7,682 | 1,000 | 30,000 |
| (6) | | e | TMJ no damage | 5 | 0.21% | 16,136 | 14,639 | 4,339 | 40,000 |
| (7) | | f | TMJ with damage | 2 | 0.09% | 40,533 | 37,523 | 14,000 | 67,065 |
| (8) | | g | Chronic | 13 | 0.56% | 21,002 | 18,276 | 6,500 | 64,000 |
| (9) | | h | Impairment | 1 | 0.04% | 32,000 | 0 | 32,000 | 32,000 |
| (10) | | i | Concussion | 2 | 0.09% | 1,500 | 707 | 1,000 | 2,000 |
| (11) | | j | Bony/lacerations/burns | 16 | 0.69% | 32,564 | 28,122 | 2,500 | 85,000 |
| (12) | | k | CAT | 1 | 0.04% | 60,000 | 0 | 60,000 | 60,000 |
| (13) | | l | Psych | 5 | 0.21% | 16,167 | 22,425 | 1,000 | 55,834 |
| (14) | | m | Other | 25 | 1.07% | 14,965 | 32,456 | 250 | 130,000 |
| (15) | 2 | ab | S or S & WAD I | 51 | 2.19% | 2,347 | 1,891 | 200 | 9,000 |
| (16) | | ac | S or S & WAD II | 527 | 22.60% | 3,579 | 1,850 | 150 | 27,500 |
| (17) | | aj | S or S & Bony/lacerations/burns | 17 | 0.73% | 27,952 | 30,181 | 1,500 | 90,000 |
| (18) | | am | S or S & Other | 19 | 0.81% | 7,053 | 10,516 | 1,000 | 40,000 |
| (19) | | ce | WAD II & TMJ no damage | 16 | 0.69% | 20,552 | 21,601 | 4,250 | 65,000 |
| (20) | | cg | WAD II & Chronic | 34 | 1.46% | 17,281 | 18,042 | 3,000 | 90,000 |
| (21) | | ci | WAD II & Concussion | 13 | 0.56% | 10,714 | 10,747 | 2,008 | 35,000 |
| (22) | | cj | WAD II & Bony/lacerations/burns | 15 | 0.64% | 25,458 | 30,844 | 2,000 | 100,000 |
| (23) | | cl | WAD II & Psych | 16 | 0.69% | 16,718 | 11,328 | 2,000 | 38,000 |
| (24) | | cm | WAD II & Other | 35 | 1.50% | 18,850 | 23,211 | 1,000 | 100,000 |
| (25) | | dg | WAD III & Chronic | 4 | 0.17% | 76,050 | 35,491 | 38,000 | 123,000 |
| (26) | | gh | Chronic & Impairment | 5 | 0.21% | 44,000 | 25,100 | 10,000 | 80,000 |
| (27) | | gj | Chronic & Bony/lacerations/burns | 2 | 0.09% | 68,000 | 45,255 | 36,000 | 100,000 |
| (28) | | gl | Chronic & Psych | 4 | 0.17% | 46,250 | 17,017 | 30,000 | 70,000 |
| (29) | | gm | Chronic & Other | 7 | 0.30% | 31,714 | 22,306 | 8,500 | 62,500 |
| (30) | | jk | Bony/lacerations/burns & CAT | 1 | 0.04% | 350,000 | 0 | 350,000 | 350,000 |
| (31) | | jl | Bony/lacerations/burns & Psych | 2 | 0.09% | 90,000 | 7,071 | 85,000 | 95,000 |
| (32) | | jm | Bony/lacerations/burns & Other | 15 | 0.64% | 48,280 | 49,895 | 2,000 | 175,000 |
| (33) | | kl | CAT & Psych | 1 | 0.04% | 253,136 | 0 | 253,136 | 253,136 |
| (34) | | km | CAT & Other | 1 | 0.04% | 150,000 | 0 | 150,000 | 150,000 |
| (35) | | | 2 Injury Types (excl. above) | 65 | 2.79% | 14,104 | | | |
| (36) | 3 | | 3 Injuries - Under $150,000 | 271 | 11.62% | 32,200 | 37,589 | 1,000 | 319,022 |
| (37) | | | 3 Injuries - Over $150,000 | | | | | | |
| (38) | 4 | | 4 Injuries - Under $150,000 | 122 | 5.23% | 47,932 | 40,622 | 3,293 | 210,000 |
| (39) | | | 4 Injuries - Over $150,000 | | | | | | |
| (40) | 5 | | 5 Injuries - Under $150,000 | 36 | 1.54% | 88,185 | 141,533 | 4,559 | 715,000 |
| (41) | | | 5 Injuries - Over $150,000 | | | | | | |
| (42) | 6 | | 6 Injuries - Under $150,000 | 11 | 0.47% | 61,573 | 37,966 | 20,300 | 165,000 |
| (43) | | | 6 Injuries - Over $150,000 | | | | | | |
| (44) | 7 | dfhijlm | 7 Injuries - Under $150,000 | 1 | 0.04% | 130,000 | 0 | 130,000 | 130,000 |
| (45) | | | 7 Injuries - Over $150,000 | | | | | | |
| (46) | 8 | adeghilm | 8 Injuries - Under $150,000 | 1 | 0.04% | 99,117 | 0 | 99,117 | 99,117 |
| (47) | | | 8 Injuries - Over $150,000 | | | | | | |
| (48) | | | Total | **2,332** | 100.00% | **14,004** | **32,340** | **100** | **715,000** |

**Alberta**
**Automobile Accident Insurance Benefits**
**Diminished Quality of Life**

**Based on non-zero pain and suffering records only**

**Assumed** Maximum **Current** Tort Benefit 300,000

| | | | | Actual Data (Current Product) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of | JSCP | | Count (Number) | | | | Average | | | |
| Row | Injuries | Ref. | Injury Description | Minor | Medium | Severe | Total | Minor | Medium | Severe | Total |
| (1) | N/A | | Unknown injuries | 7 | 1 | 1 | 9 | 25,200 | 60,000 | 220,000 | 50,711 |
| (2) | 1 | a | S or S | 251 | 6 | 0 | 257 | 2,476 | 15,752 | 0 | 2,786 |
| (3) | | b | WAD I | 87 | 0 | 0 | 87 | 2,194 | 0 | 0 | 2,194 |
| (4) | | c | WAD II | 593 | 6 | 0 | 599 | 3,716 | 29,928 | 0 | 3,979 |
| (5) | | d | WAD III | 16 | 2 | 0 | 18 | 4,710 | 27,500 | 0 | 7,242 |
| (6) | | e | TMJ no damage | 3 | 2 | 0 | 5 | 6,893 | 30,000 | 0 | 16,136 |
| (7) | | f | TMJ with damage | 1 | 1 | 0 | 2 | 14,000 | 67,065 | 0 | 40,533 |
| (8) | | g | Chronic | 8 | 4 | 1 | 13 | 9,253 | 33,750 | 64,000 | 21,002 |
| (9) | | h | Impairment | 0 | 1 | 0 | 1 | 0 | 32,000 | 0 | 32,000 |
| (10) | | i | Concussion | 2 | 0 | 0 | 2 | 1,500 | 0 | 0 | 1,500 |
| (11) | | j | Bony/lacerations/burns | 10 | 2 | 4 | 16 | 13,303 | 47,500 | 73,250 | 32,564 |
| (12) | | k | CAT | 0 | 0 | 1 | 1 | 0 | 0 | 60,000 | 60,000 |
| (13) | | l | Psych | 4 | 0 | 1 | 5 | 6,250 | 0 | 55,834 | 16,167 |
| (14) | | m | Other | 19 | 4 | 2 | 25 | 1,665 | 27,500 | 116,251 | 14,965 |
| (15) | 2 | ab | S or S & WAD I | 51 | 0 | 0 | 51 | 2,347 | 0 | 0 | 2,347 |
| (16) | | ac | S or S & WAD II | 525 | 2 | 0 | 527 | 3,502 | 23,750 | 0 | 3,579 |
| (17) | | aj | S or S & Bony/lacerations/burns | 11 | 3 | 3 | 17 | 8,221 | 48,750 | 79,500 | 27,952 |
| (18) | | am | S or S & Other | 16 | 3 | 0 | 19 | 3,034 | 28,488 | 0 | 7,053 |
| (19) | | ce | WAD II & TMJ no damage | 11 | 3 | 2 | 16 | 7,576 | 40,167 | 62,500 | 20,552 |
| (20) | | cg | WAD II & Chronic | 23 | 10 | 1 | 34 | 8,247 | 30,787 | 90,000 | 17,281 |
| (21) | | ci | WAD II & Concussion | 10 | 3 | 0 | 13 | 5,683 | 27,487 | 0 | 10,714 |
| (22) | | cj | WAD II & Bony/lacerations/burns | 11 | 2 | 2 | 15 | 10,215 | 39,750 | 95,000 | 25,458 |
| (23) | | cl | WAD II & Psych | 9 | 7 | 0 | 16 | 8,011 | 27,914 | 0 | 16,718 |
| (24) | | cm | WAD II & Other | 25 | 7 | 3 | 35 | 7,029 | 35,571 | 78,333 | 18,850 |
| (25) | | dg | WAD III & Chronic | 1 | 2 | 1 | 4 | 38,000 | 71,600 | 123,000 | 76,050 |
| (26) | | gh | Chronic & Impairment | 3 | 1 | 1 | 5 | 30,000 | 50,000 | 80,000 | 44,000 |
| (27) | | gj | Chronic & Bony/lacerations/burns | 1 | 0 | 1 | 2 | 36,000 | 0 | 100,000 | 68,000 |
| (28) | | gl | Chronic & Psych | 3 | 0 | 1 | 4 | 38,333 | 0 | 70,000 | 46,250 |
| (29) | | gm | Chronic & Other | 5 | 0 | 2 | 7 | 19,400 | 0 | 62,500 | 31,714 |
| (30) | | jk | Bony/lacerations/burns & CAT | 0 | 0 | 1 | 1 | 0 | 0 | 350,000 | 350,000 |
| (31) | | jl | Bony/lacerations/burns & Psych | 0 | 1 | 1 | 2 | 0 | 85,000 | 95,000 | 90,000 |
| (32) | | jm | Bony/lacerations/burns & Other | 10 | 2 | 3 | 15 | 18,920 | 72,500 | 130,000 | 48,280 |
| (33) | | kl | CAT & Psych | 0 | 0 | 1 | 1 | 0 | 0 | 253,136 | 253,136 |
| (34) | | km | CAT & Other | 0 | 0 | 1 | 1 | 0 | 0 | 150,000 | 150,000 |
| (35) | | | 2 Injury Types (excl. above) | 38 | 27 | 0 | 65 | 6,928 | 24,204 | 0 | 14,104 |
| (36) | 3 | | 3 Injuries - Under $150,000 | 173 | 65 | 28 | 266 | 12,413 | 45,694 | 91,561 | 28,877 |
| (37) | | | 3 Injuries - Over $150,000 | 0 | 0 | 5 | 5 | 0 | 0 | 208,956 | 208,956 |
| (38) | 4 | | 4 Injuries - Under $150,000 | 76 | 33 | 7 | 116 | 24,814 | 64,821 | 105,393 | 41,058 |
| (39) | | | 4 Injuries - Over $150,000 | 0 | 0 | 6 | 6 | 0 | 0 | 180,833 | 180,833 |
| (40) | 5 | | 5 Injuries - Under $150,000 | 22 | 7 | 4 | 33 | 32,587 | 70,036 | 116,250 | 50,672 |
| (41) | | | 5 Injuries - Over $150,000 | 0 | 0 | 3 | 3 | 0 | 0 | 500,833 | 500,833 |
| (42) | 6 | | 6 Injuries - Under $150,000 | 5 | 5 | 0 | 10 | 37,060 | 65,400 | 0 | 51,230 |
| (43) | | | 6 Injuries - Over $150,000 | 0 | 0 | 1 | 1 | 0 | 0 | 165,000 | 165,000 |
| (44) | 7 | dfhijlm | 7 Injuries - Under $150,000 | 0 | 0 | 1 | 1 | 0 | 0 | 130,000 | 130,000 |
| (45) | | | 7 Injuries - Over $150,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (46) | 8 | adeghilm | 8 Injuries - Under $150,000 | 0 | 0 | 1 | 1 | 0 | 0 | 99,117 | 99,117 |
| (47) | | | 8 Injuries - Over $150,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (48) | | | Total | 2,030 | 212 | 90 | 2,332 | 5,971 | 43,421 | 125,920 | 14,004 |

**Alberta**
**Automobile Accident Insurance Benefits**
**Diminished Quality of Life**

**Based on non-zero pain and suffering records only**

**Total Count (from page 1): 12,480**

| | | | | Model 1 (New Benefit) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of | JSCP | | Count (%) | | | | Count (Number) | | | |
| Row | Injuries | Ref. | Injury Description | Minor | Medium | Severe | Total | Minor | Medium | Severe | Total |
| (1) | N/A | | Unknown injuries | 0.30% | 0.04% | 0.04% | 0.39% | 37 | 5 | 5 | 48 |
| (2) | 1 | a | S or S | 10.76% | 0.26% | 0.00% | 11.02% | 1,343 | 32 | 0 | 1,375 |
| (3) | | b | WAD I | 3.73% | 0.00% | 0.00% | 3.73% | 466 | 0 | 0 | 466 |
| (4) | | c | WAD II | 25.43% | 0.26% | 0.00% | 25.69% | 3,174 | 32 | 0 | 3,206 |
| (5) | | d | WAD III | 0.69% | 0.09% | 0.00% | 0.77% | 86 | 11 | 0 | 96 |
| (6) | | e | TMJ no damage | 0.13% | 0.09% | 0.00% | 0.21% | 16 | 11 | 0 | 27 |
| (7) | | f | TMJ with damage | 0.04% | 0.04% | 0.00% | 0.09% | 5 | 5 | 0 | 11 |
| (8) | | g | Chronic | 0.34% | 0.17% | 0.04% | 0.56% | 43 | 21 | 5 | 70 |
| (9) | | h | Impairment | 0.00% | 0.04% | 0.00% | 0.04% | 0 | 5 | 0 | 5 |
| (10) | | i | Concussion | 0.09% | 0.00% | 0.00% | 0.09% | 11 | 0 | 0 | 11 |
| (11) | | j | Bony/lacerations/burns | 0.43% | 0.09% | 0.17% | 0.69% | 54 | 11 | 21 | 86 |
| (12) | | k | CAT | 0.00% | 0.00% | 0.04% | 0.04% | 0 | 0 | 5 | 5 |
| (13) | | l | Psych | 0.17% | 0.00% | 0.04% | 0.21% | 21 | 0 | 5 | 27 |
| (14) | | m | Other | 0.81% | 0.17% | 0.09% | 1.07% | 102 | 21 | 11 | 134 |
| (15) | 2 | ab | S or S & WAD I | 2.19% | 0.00% | 0.00% | 2.19% | 273 | 0 | 0 | 273 |
| (16) | | ac | S or S & WAD II | 22.51% | 0.09% | 0.00% | 22.60% | 2,810 | 11 | 0 | 2,820 |
| (17) | | aj | S or S & Bony/lacerations/burns | 0.47% | 0.13% | 0.13% | 0.73% | 59 | 16 | 16 | 91 |
| (18) | | am | S or S & Other | 0.69% | 0.13% | 0.00% | 0.81% | 86 | 16 | 0 | 102 |
| (19) | | ce | WAD II & TMJ no damage | 0.47% | 0.13% | 0.09% | 0.69% | 59 | 16 | 11 | 86 |
| (20) | | cg | WAD II & Chronic | 0.99% | 0.43% | 0.04% | 1.46% | 123 | 54 | 5 | 182 |
| (21) | | ci | WAD II & Concussion | 0.43% | 0.13% | 0.00% | 0.56% | 54 | 16 | 0 | 70 |
| (22) | | cj | WAD II & Bony/lacerations/burns | 0.47% | 0.09% | 0.09% | 0.64% | 59 | 11 | 11 | 80 |
| (23) | | cl | WAD II & Psych | 0.39% | 0.30% | 0.00% | 0.69% | 48 | 37 | 0 | 86 |
| (24) | | cm | WAD II & Other | 1.07% | 0.30% | 0.13% | 1.50% | 134 | 37 | 16 | 187 |
| (25) | | dg | WAD III & Chronic | 0.04% | 0.09% | 0.04% | 0.17% | 5 | 11 | 5 | 21 |
| (26) | | gh | Chronic & Impairment | 0.13% | 0.04% | 0.04% | 0.21% | 16 | 5 | 5 | 27 |
| (27) | | gj | Chronic & Bony/lacerations/burns | 0.04% | 0.00% | 0.04% | 0.09% | 5 | 0 | 5 | 11 |
| (28) | | gl | Chronic & Psych | 0.13% | 0.00% | 0.04% | 0.17% | 16 | 0 | 5 | 21 |
| (29) | | gm | Chronic & Other | 0.21% | 0.00% | 0.09% | 0.30% | 27 | 0 | 11 | 37 |
| (30) | | jk | Bony/lacerations/burns & CAT | 0.00% | 0.00% | 0.04% | 0.04% | 0 | 0 | 5 | 5 |
| (31) | | jl | Bony/lacerations/burns & Psych | 0.00% | 0.04% | 0.04% | 0.09% | 0 | 5 | 5 | 11 |
| (32) | | jm | Bony/lacerations/burns & Other | 0.43% | 0.09% | 0.13% | 0.64% | 54 | 11 | 16 | 80 |
| (33) | | kl | CAT & Psych | 0.00% | 0.00% | 0.04% | 0.04% | 0 | 0 | 5 | 5 |
| (34) | | km | CAT & Other | 0.00% | 0.00% | 0.04% | 0.04% | 0 | 0 | 5 | 5 |
| (35) | | | 2 Injury Types (excl. above) | 1.63% | 1.16% | 0.00% | 2.79% | 203 | 144 | 0 | 348 |
| (36) | 3 | | 3 Injuries - Under $150,000 | 7.42% | 2.79% | 1.20% | 11.41% | 926 | 348 | 150 | 1,424 |
| (37) | | | 3 Injuries - Over $150,000 | 0.00% | 0.00% | 0.21% | 0.21% | 0 | 0 | 27 | 27 |
| (38) | 4 | | 4 Injuries - Under $150,000 | 3.26% | 1.42% | 0.30% | 4.97% | 407 | 177 | 37 | 621 |
| (39) | | | 4 Injuries - Over $150,000 | 0.00% | 0.00% | 0.26% | 0.26% | 0 | 0 | 32 | 32 |
| (40) | 5 | | 5 Injuries - Under $150,000 | 0.94% | 0.30% | 0.17% | 1.42% | 118 | 37 | 21 | 177 |
| (41) | | | 5 Injuries - Over $150,000 | 0.00% | 0.00% | 0.13% | 0.13% | 0 | 0 | 16 | 16 |
| (42) | 6 | | 6 Injuries - Under $150,000 | 0.21% | 0.21% | 0.00% | 0.43% | 27 | 27 | 0 | 54 |
| (43) | | | 6 Injuries - Over $150,000 | 0.00% | 0.00% | 0.04% | 0.04% | 0 | 0 | 5 | 5 |
| (44) | 7 | dfhijlm | 7 Injuries - Under $150,000 | 0.00% | 0.00% | 0.04% | 0.04% | 0 | 0 | 5 | 5 |
| (45) | | | 7 Injuries - Over $150,000 | 0.00% | 0.00% | 0.00% | 0.00% | 0 | 0 | 0 | 0 |
| (46) | 8 | adeghilm | 8 Injuries - Under $150,000 | 0.00% | 0.00% | 0.04% | 0.04% | 0 | 0 | 5 | 5 |
| (47) | | | 8 Injuries - Over $150,000 | 0.00% | 0.00% | 0.00% | 0.00% | 0 | 0 | 0 | 0 |
| (48) | | | Total | 87.05% | 9.09% | 3.86% | 100.00% | 10,864 | 1,135 | 482 | 12,480 |

**Alberta**
**Automobile Accident Insurance Benefits**
**Diminished Quality of Life**
**Based on non-zero pain and suffering records only**

| Schedule | JSCP | Data | Maximum Benefit: | 300,000 |
|---|---|---|---|---|

| | | | | Model 1 (New Benefit) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number of | JSCP | | Permanent Impairment (PI) % | | | Benefit = PI% × Maximum | | |
| Row | Injuries | Ref. | Injury Description | Minor | Medium | Severe | Minor | Medium | Severe |
| (1) | N/A | | Unknown injuries | 0.5% | 7.0% | 15.0% | 1,500 | 21,000 | 45,000 |
| (2) | 1 | a | S or S | 0.0% | 0.0% | 0.0% | 0 | 0 | 0 |
| (3) | | b | WAD I | 0.0% | 0.0% | 0.0% | 0 | 0 | 0 |
| (4) | | c | WAD II | 1.0% | 5.0% | 10.0% | 3,000 | 15,000 | 30,000 |
| (5) | | d | WAD III | 3.00% | 7.00% | 12.00% | 9,000 | 21,000 | 36,000 |
| (6) | | e | TMJ no damage | 1.0% | 4.0% | 10.0% | 3,000 | 12,000 | 30,000 |
| (7) | | f | TMJ with damage | 4.0% | 10.0% | 40.0% | 12,000 | 30,000 | 120,000 |
| (8) | | g | Chronic | 1.0% | 4.0% | 10.0% | 3,000 | 12,000 | 30,000 |
| (9) | | h | Impairment | 1.0% | 4.0% | 10.0% | 3,000 | 12,000 | 30,000 |
| (10) | | i | Concussion | 1.0% | 4.0% | 10.0% | 3,000 | 12,000 | 30,000 |
| (11) | | j | Bony/lacerations/burns | 1.0% | 2.0% | 5.0% | 3,000 | 6,000 | 15,000 |
| (12) | | k | CAT | N/A | N/A | 100.0% | 0 | 0 | 300,000 |
| (13) | | l | Psych | 0.0% | 5.0% | 10.0% | 0 | 15,000 | 30,000 |
| (14) | | m | Other | 1.0% | 5.0% | 10.0% | 3,000 | 15,000 | 30,000 |
| (15) | 2 | ab | S or S & WAD I | 0.0% | 0.0% | 0.0% | 0 | 0 | 0 |
| (16) | | ac | S or S & WAD II | 1.0% | 5.0% | 10.0% | 3,000 | 15,000 | 30,000 |
| (17) | | aj | S or S & Bony/lacerations/burns | 1.0% | 2.0% | 5.0% | 3,000 | 6,000 | 15,000 |
| (18) | | am | S or S & Other | 1.0% | 5.0% | 10.0% | 3,000 | 15,000 | 30,000 |
| (19) | | ce | WAD II & TMJ no damage | 1.0% | 4.0% | 10.0% | 3,000 | 12,000 | 30,000 |
| (20) | | cg | WAD II & Chronic | 1.0% | 4.0% | 10.0% | 3,000 | 12,000 | 30,000 |
| (21) | | ci | WAD II & Concussion | 2.0% | 9.0% | 20.0% | 6,000 | 27,000 | 60,000 |
| (22) | | cj | WAD II & Bony/lacerations/burns | 2.0% | 7.0% | 15.0% | 6,000 | 21,000 | 45,000 |
| (23) | | cl | WAD II & Psych | 1.0% | 5.0% | 10.0% | 3,000 | 15,000 | 30,000 |
| (24) | | cm | WAD II & Other | 3.0% | 7.0% | 12.0% | 9,000 | 21,000 | 36,000 |
| (25) | | dg | WAD III & Chronic | 3.0% | 7.0% | 12.0% | 9,000 | 21,000 | 36,000 |
| (26) | | gh | Chronic & Impairment | 5.0% | 9.0% | 14.0% | 15,000 | 27,000 | 42,000 |
| (27) | | gj | Chronic & Bony/lacerations/burns | 5.0% | 9.0% | 14.0% | 15,000 | 27,000 | 42,000 |
| (28) | | gl | Chronic & Psych | 1.0% | 4.0% | 10.0% | 3,000 | 12,000 | 30,000 |
| (29) | | gm | Chronic & Other | 3.0% | 6.0% | 12.0% | 9,000 | 18,000 | 36,000 |
| (30) | | jk | Bony/lacerations/burns & CAT | 100.0% | 100.0% | 100.0% | 300,000 | 300,000 | 300,000 |
| (31) | | jl | Bony/lacerations/burns & Psych | 1.0% | 7.0% | 15.0% | 3,000 | 21,000 | 45,000 |
| (32) | | jm | Bony/lacerations/burns & Other | 2.00% | 7.00% | 15.00% | 6,000 | 21,000 | 45,000 |
| (33) | | kl | CAT & Psych | 100.0% | 100.0% | 100.0% | 300,000 | 300,000 | 300,000 |
| (34) | | km | CAT & Other | 100.0% | 100.0% | 100.0% | 300,000 | 300,000 | 300,000 |
| (35) | | | 2 Injury Types (excl. above) | 1.0% | 5.0% | 10.0% | 3,000 | 15,000 | 30,000 |
| (36) | 3 | | 3 Injuries - Under $150,000 | 2.0% | 5.0% | 10.0% | 6,000 | 15,000 | 30,000 |
| (37) | | | 3 Injuries - Over $150,000 | 50.0% | 50.0% | 50.0% | 150,000 | 150,000 | 150,000 |
| (38) | 4 | | 4 Injuries - Under $150,000 | 2.0% | 10.0% | 15.0% | 6,000 | 30,000 | 45,000 |
| (39) | | | 4 Injuries - Over $150,000 | 75.0% | 75.0% | 75.0% | 225,000 | 225,000 | 225,000 |
| (40) | 5 | | 5 Injuries - Under $150,000 | 2.0% | 15.0% | 20.0% | 6,000 | 45,000 | 60,000 |
| (41) | | | 5 Injuries - Over $150,000 | 100.0% | 100.0% | 100.0% | 300,000 | 300,000 | 300,000 |
| (42) | 6 | | 6 Injuries - Under $150,000 | 2.0% | 20.0% | 25.0% | 6,000 | 60,000 | 75,000 |
| (43) | | | 6 Injuries - Over $150,000 | 100.0% | 100.0% | 100.0% | 300,000 | 300,000 | 300,000 |
| (44) | 7 | dfhijlm | 7 Injuries - Under $150,000 | 2.0% | 25.0% | 30.0% | 6,000 | 75,000 | 90,000 |
| (45) | | | 7 Injuries - Over $150,000 | 100.0% | 100.0% | 100.0% | 300,000 | 300,000 | 300,000 |
| (46) | 8 | adeghilm | 8 Injuries - Under $150,000 | 2.0% | 30.0% | 35.0% | 6,000 | 90,000 | 105,000 |
| (47) | | | 8 Injuries - Over $150,000 | 100.0% | 100.0% | 100.0% | 300,000 | 300,000 | 300,000 |
| (48) | | | Total | | | | 32,968,714 | 21,834,648 | 37,728,988 |

**Alberta**

**Automobile Accident Insurance Benefits**

**Diminished Quality of Life**

**Based on non-zero pain and suffering records only**

| | | | | Comparison (Current Benefit vs. New Benefit) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number of | JSCP | | Current Benefit (Page 2) | | | New Benefit (Page 4) | | |
| Row | Injuries | Ref. | Injury Description | Minor | Medium | Severe | Minor | Medium | Severe |
| (1) | N/A | | Unknown injuries | 25,200 | 60,000 | 220,000 | 1,500 | 21,000 | 45,000 |
| (2) | 1 | a | S or S | 2,476 | 15,752 | 0 | 0 | 0 | 0 |
| (3) | | b | WAD I | 2,194 | 0 | 0 | 0 | 0 | 0 |
| (4) | | c | WAD II | 3,716 | 29,928 | 0 | 3,000 | 15,000 | 30,000 |
| (5) | | d | WAD III | 4,710 | 27,500 | 0 | 9,000 | 21,000 | 36,000 |
| (6) | | e | TMJ no damage | 6,893 | 30,000 | 0 | 3,000 | 12,000 | 30,000 |
| (7) | | f | TMJ with damage | 14,000 | 67,065 | 0 | 12,000 | 30,000 | 120,000 |
| (8) | | g | Chronic | 9,253 | 33,750 | 64,000 | 3,000 | 12,000 | 30,000 |
| (9) | | h | Impairment | 0 | 32,000 | 0 | 3,000 | 12,000 | 30,000 |
| (10) | | i | Concussion | 1,500 | 0 | 0 | 3,000 | 12,000 | 30,000 |
| (11) | | j | Bony/lacerations/burns | 13,303 | 47,500 | 73,250 | 3,000 | 6,000 | 15,000 |
| (12) | | k | CAT | 0 | 0 | 60,000 | 0 | 0 | 300,000 |
| (13) | | l | Psych | 6,250 | 0 | 55,834 | 0 | 15,000 | 30,000 |
| (14) | | m | Other | 1,665 | 27,500 | 116,251 | 3,000 | 15,000 | 30,000 |
| (15) | 2 | ab | S or S & WAD I | 2,347 | 0 | 0 | 0 | 0 | 0 |
| (16) | | ac | S or S & WAD II | 3,502 | 23,750 | 0 | 3,000 | 15,000 | 30,000 |
| (17) | | aj | S or S & Bony/lacerations/burns | 8,221 | 48,750 | 79,500 | 3,000 | 6,000 | 15,000 |
| (18) | | am | S or S & Other | 3,034 | 28,488 | 0 | 3,000 | 15,000 | 30,000 |
| (19) | | ce | WAD II & TMJ no damage | 7,576 | 40,167 | 62,500 | 3,000 | 12,000 | 30,000 |
| (20) | | cg | WAD II & Chronic | 8,247 | 30,787 | 90,000 | 3,000 | 12,000 | 30,000 |
| (21) | | ci | WAD II & Concussion | 5,683 | 27,487 | 0 | 6,000 | 27,000 | 60,000 |
| (22) | | cj | WAD II & Bony/lacerations/burns | 10,215 | 39,750 | 95,000 | 6,000 | 21,000 | 45,000 |
| (23) | | cl | WAD II & Psych | 8,011 | 27,914 | 0 | 3,000 | 15,000 | 30,000 |
| (24) | | cm | WAD II & Other | 7,029 | 35,571 | 78,333 | 9,000 | 21,000 | 36,000 |
| (25) | | dg | WAD III & Chronic | 38,000 | 71,600 | 123,000 | 9,000 | 21,000 | 36,000 |
| (26) | | gh | Chronic & Impairment | 30,000 | 50,000 | 80,000 | 15,000 | 27,000 | 42,000 |
| (27) | | gj | Chronic & Bony/lacerations/burns | 36,000 | 0 | 100,000 | 15,000 | 27,000 | 42,000 |
| (28) | | gl | Chronic & Psych | 38,333 | 0 | 70,000 | 3,000 | 12,000 | 30,000 |
| (29) | | gm | Chronic & Other | 19,400 | 0 | 62,500 | 9,000 | 18,000 | 36,000 |
| (30) | | jk | Bony/lacerations/burns & CAT | 0 | 0 | 350,000 | 300,000 | 300,000 | 300,000 |
| (31) | | jl | Bony/lacerations/burns & Psych | 0 | 85,000 | 95,000 | 3,000 | 21,000 | 45,000 |
| (32) | | jm | Bony/lacerations/burns & Other | 18,920 | 72,500 | 130,000 | 6,000 | 21,000 | 45,000 |
| (33) | | kl | CAT & Psych | 0 | 0 | 253,136 | 300,000 | 300,000 | 300,000 |
| (34) | | km | CAT & Other | 0 | 0 | 150,000 | 300,000 | 300,000 | 300,000 |
| (35) | | | 2 Injury Types (excl. above) | 6,928 | 24,204 | 0 | 3,000 | 15,000 | 30,000 |
| (36) | 3 | | 3 Injuries - Under $150,000 | 12,413 | 45,694 | 91,561 | 6,000 | 15,000 | 30,000 |
| (37) | | | 3 Injuries - Over $150,000 | 0 | 0 | 208,956 | 150,000 | 150,000 | 150,000 |
| (38) | 4 | | 4 Injuries - Under $150,000 | 24,814 | 64,821 | 105,393 | 6,000 | 30,000 | 45,000 |
| (39) | | | 4 Injuries - Over $150,000 | 0 | 0 | 180,833 | 225,000 | 225,000 | 225,000 |
| (40) | 5 | | 5 Injuries - Under $150,000 | 32,587 | 70,036 | 116,250 | 6,000 | 45,000 | 60,000 |
| (41) | | | 5 Injuries - Over $150,000 | 0 | 0 | 500,833 | 300,000 | 300,000 | 300,000 |
| (42) | 6 | | 6 Injuries - Under $150,000 | 37,060 | 65,400 | 0 | 6,000 | 60,000 | 75,000 |
| (43) | | | 6 Injuries - Over $150,000 | 0 | 0 | 165,000 | 300,000 | 300,000 | 300,000 |
| (44) | 7 | dfhijlm | 7 Injuries - Under $150,000 | 0 | 0 | 130,000 | 6,000 | 75,000 | 90,000 |
| (45) | | | 7 Injuries - Over $150,000 | 0 | 0 | 0 | 300,000 | 300,000 | 300,000 |
| (46) | 8 | adeghilm | 8 Injuries - Under $150,000 | 0 | 0 | 99,117 | 6,000 | 90,000 | 105,000 |
| (47) | | | 8 Injuries - Over $150,000 | 0 | 0 | 0 | 300,000 | 300,000 | 300,000 |
| (48) | | | Total | 5,971 | 43,421 | 125,920 | 3,035 | 19,245 | 78,333 |

**Key Questions**

| JSCP Reference | Bodily Injury Closed Claim Study in Alberta |
|---|---|
| | **Q14** Please describe the claimant's injuries.* Select all that apply. |
| S or S | ☐ a. Sprain or strain |
| WAD I | ☐ b. Whiplash Associated Disorder (WAD) I |
| WAD II | ☐ c. WAD II |
| WAD III | ☐ d. WAD III |
| TMJ no damage | ☐ e. Any a. to d., plus Temporomandibular Joint (TMJ) injury with no damage to bone or teeth or displacement of articular disc |
| TMJ with damage | ☐ f. Any a. to d., plus TMJ injury with objective damage to bone or teeth or displacement of articular disc |
| Chronic | ☐ g. Any a. to d. with duration lasting longer than six months (i.e. a chronic injury) |
| Impairment | ☐ h. Any a. to d. resulting in impairment of a physical or cognitive function |
| Concussion | ☐ i. Concussion |
| Bony/lacerations/burns | ☐ j. Bony injuries, lacerations, burns, etc. |
| CAT | ☐ k. Catastrophic injury, e.g. paralysis or brain injury |
| Psych | ☐ l. Psychological injury or Post-Traumatic Stress Disorder (PTSD) |
| Other | ☐ m. Other, please specify |
| | **Q42** 2) Non-pecuniary losses |
| | g. pain and suffering |
| | h. loss of consortium |
| | i. Fatal Accident Act damages, if applicable* |

**Thresholds for Actual Data (Current Product)**

| | |
|---|---|
| Minor | (No more than $50,000)<br>$10,000 or less pain & suffering<br>Less than the average for the injury type |
| Severe | (At least $50,000)<br>CAT injury (injury k)<br>Greater than $95,000<br>More than the 1 standard deviation above the average for that injury type |

# APPENDIX 1.8

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Housekeeping

**Housekeeping Benefit**

**Loss Cost (including ALAE; excluding ULAE, Health Levy and CAT)**

Model 1

| Injury Type | (1) Estimated 2018 # Claimants | (2) Average Duration | (3) Average Monthly Amount | (4) Undisc. Total Dollars | (5) Discounted 1.0% Total Dollars | (6) 2018 Earned Vehicle | (7) Undisc. Total Loss Cost | (8) Disc. Total Loss Cost |
|---|---|---|---|---|---|---|---|---|
| Type 1 | | | | | | | | |
| Type 2S | 193 | 3.9 | 650 | 483,700 | 482,839 | 2,746,098 | 0.18 | 0.18 |
| Type 2L | 138 | 3.9 | 650 | 346,450 | 345,834 | 2,746,098 | 0.13 | 0.13 |
| Type 3 | 19 | 72.9 | 773 | 1,070,350 | 1,029,934 | 2,746,098 | 0.39 | 0.38 |
| Total | 350 | | | 1,900,500 | 1,858,607 | 2,746,098 | 0.69 | 0.68 |

| | | | |
|---|---|---|---|
| (9) Data Adjustment Load | 1.000 | | |
| (10) Winter Tire Savings Factor | 0.975 | | |
| (11) ALAE Load | 1.070 | Loaded Loss Cost | 0.76 |
| (12) Uncertainty Load | 1.050 | Loaded Disc. Loss Cost | 0.74 |

Note:

(1) Not applicable to Injury Type 1. Based on Disability Income claims distribution.
(2) Based on Cash Flow
(3) = (4) / [(1) x (2)]
(4) Based on Cash Flow
(5) Based on Cash Flow
(6) AY 2018 Accident Benefits earned vehicles from GISA report .
(7) = (4) / (6)
(8) = (5) / (6)
(9) Not Applicable
(10) Judgmentally selected
(11) Based on three year weighted average of GISA Accident Benefit data
(12) Judgmentally selected

**Alberta**
**Automobile Accident Insurance Benefits**
**Housekeeping Benefit**

**Description of Benefit**

Model 1

| Type | Disability Expected Count | AttCare Expected Count | ADJ. Medical | ADJ. Disability & Medical | % | Claim Count | Monthly Benefit 1st 6 months | Monthly Benefit 7-24 months | Monthly Benefit Thereafter | Aggregate Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| 1a | | | | | | | | | | |
| 1b | | | | | | | | | | |
| 1c | | | | | | | | | | |
| 2Sa | | 253 | | 20.5% | 0.0% | 0 | | | | |
| 2La | | 74 | | 6.0% | 0.0% | 0 | | | | |
| 2Sb | 919 | 470 | 58.8% | 38.0% | 55.0% | 193 | 650 | 650 | | 3,000 |
| 2Lb | 622 | 420 | 39.8% | 34.0% | 39.5% | 138 | 650 | 650 | | 3,000 |
| 3 | 21 | 19 | 1.3% | 1.5% | 5.5% | 19 | 650 | 650 | 650 | 100,000 |
| Total | | | | | 100.0% | 350 | | | | |

2S and 2L are further split into categories a and b; category a capped at 6 months

Assume number of type 3 claims under this section is in line with number of calims in disability income and attendant care sections.

**Discount rate**

1.0%

| Exposure | | Frequency Assumption | | Expected Number of Claims |
|---|---|---|---|---|
| 2,746,098 | (2018 Earned) | 0.012% | (based on Ontario Experience) | 343 |

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# APPENDIX 2 – COSTING OF MODEL 2

IRB for wage earners

**Loss Cost (including ALAE; excluding ULAE, Health Levy and CAT)**

| | | |
|---|---|---|
| 2018 Earned Exposure | 2,746,098 | |
| Frequency Assumption | 0.109% | (based on last 9 years) |
| Expected Number of WB Claims | 2,985 | |
| Expected Number of Non-Earner Claims | 100 | |
| Expected Number of Earner Claims | 2,885 | |
| Selected | 2,900 | |

Model 2

| Injury Type | (1) Estimated 2018 # Claimants | (2) Average Duration | (3) Average Monthly Amount | (4) Undisc. Total Dollars | (5) Discounted 1.0% Total Dollars | (6) 2018 Earned Vehicle | (7) Undisc. Total Loss Cost | (8) Disc. Total Loss Cost |
|---|---|---|---|---|---|---|---|---|
| Type 1 | 1,338 | 3.1 | 2,520 | 10,591,124 | 10,364,630 | 2,746,098 | 3.9 | 3.8 |
| Type 2S | 919 | 8.7 | 1,863 | 14,977,728 | 14,839,874 | 2,746,098 | 5.5 | 5.4 |
| Type 2L | 622 | 13.4 | 1,840 | 15,311,833 | 15,174,155 | 2,746,098 | 5.6 | 5.5 |
| Type 3 | 21 | 346.5 | 1,319 | 9,592,826 | 8,176,033 | 2,746,098 | 3.5 | 3.0 |
| Total | 2,900 | 9.9 | 1,756 | 50,473,510 | 48,554,691 | 2,746,098 | 18.38 | 17.68 |

| | | | |
|---|---|---|---|
| (9) Data Adjustment Load | 1.057 | | |
| (10) Balance Back Factor | 1.150 | | |
| (11) ALAE Load | 1.070 | | |
| (12) Winter Tire Savings Factor | 0.975 | Loaded Loss Cost | 27.97 |
| (13) Uncertainty Load | 1.200 | Loaded Disc. Loss Cost | 26.91 |

Note:

(1) Based on the selected expected number of claims and selected injury type distribution. Please refer to page 2 for injury type distibution.
(2) See page 3.
(3) = (4) / ((1) x (2))
(4) = simulated severity x (1). Please refer to page 3 for simulated undiscounted severity.
(5) = simulated discounted severity x (1). Please refer to page 3 for simulated discounted severity.
(6) AY 2018 Accident Benefits earned vehicles from GISA report .
(7) = (4) / (6)
(8) = (5) / (6)
(9) Data is capped and excludes IBNR and large losses.
This factor is to allow the simulated results to be on the same basis as GISA AY 2016.
(10) The simulated severity was calibrated using AY 2016 as the starting point.
This factor is to allow the simulated results to be on the same basis as the current GISA model.
(11) Based on AY2016 ALAE and Losses disability data.
(12) Judgmentally selected.
(13) Judgmentally selected.

**Alberta**
**Automobile Accident Insurance Benefits**
**Income Replacement Benefit for Wage Earners**

**Simulation Validation**

Within Simulated Claims:

| | | | |
|---|---|---|---|
| Average Gross Income | 57,234 | Average Weekly Benefit | 355 |
| Median Gross Income | 55,000 | % Weekly Benefit =$400 | 62% |
| % With LTD | 72% | % With STD | 32% |

| Simulated Claim Profile | | | | | |
|---|---|---|---|---|---|
| Age | | % Count | Gross Income | | % Count |
| <20 | | 0.0% | <10000 | | 0.0% |
| 20 | 24 | 8.4% | 10,000 | 19,999 | 13.1% |
| 25 | 29 | 15.8% | 20,000 | 29,999 | 11.3% |
| 30 | 34 | 15.0% | 30,000 | 39,999 | 11.0% |
| 35 | 39 | 11.8% | 40,000 | 49,999 | 11.0% |
| 40 | 44 | 12.0% | 50,000 | 59,999 | 9.4% |
| 45 | 49 | 10.0% | 60,000 | 69,999 | 8.2% |
| 50 | 54 | 10.2% | 70,000 | 79,999 | 7.0% |
| 55 | 59 | 6.7% | 80,000 | 89,999 | 5.6% |
| 60 | 64 | 6.9% | 90,000 | 99,999 | 5.2% |
| >=65 | | 3.4% | >=100000 | | 18.3% |

| Observed - Closed Claim Study | | | | | |
|---|---|---|---|---|---|
| Age | | % Count | Gross Income | | % Count |
| <20 | | 7.4% | <10000 | | 4.9% |
| 20 | 24 | 14.1% | 10,000 | 19,999 | 9.3% |
| 25 | 29 | 13.4% | 20,000 | 29,999 | 23.9% |
| 30 | 34 | 9.8% | 30,000 | 39,999 | 18.8% |
| 35 | 39 | 10.1% | 40,000 | 49,999 | 11.3% |
| 40 | 44 | 11.4% | 50,000 | 59,999 | 8.2% |
| 45 | 49 | 11.2% | 60,000 | 69,999 | 7.0% |
| 50 | 54 | 9.6% | 70,000 | 79,999 | 6.6% |
| 55 | 59 | 6.9% | 80,000 | 89,999 | 2.7% |
| 60 | 64 | 3.8% | 90,000 | 99,999 | 1.9% |
| >=65 | | 2.2% | >=100000 | | 5.4% |

| Simulated | | | |
|---|---|---|---|
| Model 5 | Severity | Duration (Months) | Weekly Benefit |
| Average | 9,974 | 6.6 | 355 |
| Percentile | | | |
| 10% | 1,333 | 0.8 | 263 |
| 20% | 1,333 | 0.8 | 278 |
| 30% | 3,067 | 1.8 | 344 |
| 40% | 3,498 | 2.8 | 400 |
| 50% | 4,808 | 3.8 | 400 |
| 60% | 8,267 | 5.8 | 400 |
| 70% | 11,733 | 7.8 | 400 |
| 80% | 16,933 | 10.8 | 400 |
| 90% | 27,398 | 19.8 | 400 |
| 95% | 36,000 | 24.0 | 400 |
| 99% | 41,600 | 24.0 | 400 |

| Observed | | | |
|---|---|---|---|
| AY2016 | Severity | Duration (Months) | Weekly Benefit |
| Average | 9,986 | 6.1 | 347 |
| Percentile | | | |
| 10% | 669 | 0.5 | 265 |
| 20% | 1,250 | 0.9 | 308 |
| 30% | 2,025 | 1.4 | 342 |
| 40% | 3,064 | 2.0 | 363 |
| 50% | 4,229 | 2.8 | 383 |
| 60% | 6,086 | 4.1 | 400 |
| 70% | 10,000 | 6.5 | 400 |
| 80% | 17,099 | 11.5 | 400 |
| 90% | 33,789 | 22.1 | 400 |
| 95% | 41,450 | 24.0 | 400 |
| 99% | 41,600 | 24.0 | 400 |

| Average by Claim Type (Simulated) | | | | |
|---|---|---|---|---|
| Model 5 | Severity | Duration (Months) | Weekly Benefit | % of all claims |
| Type 1a | 3,480 | 2.3 | 355 | 4.5% |
| Type 1b | 3,967 | 2.6 | 358 | 27.5% |
| Type 1c | 6,698 | 4.4 | 359 | 14.0% |
| Type 2S | 11,481 | 7.6 | 353 | 31.5% |
| Type 2L | 17,867 | 11.9 | 350 | 21.7% |
| Type 3 | 36,707 | 24.0 | 353 | 0.8% |

| Average by Claim Type (Observed) | | | | |
|---|---|---|---|---|
| AY2016 | Severity | Duration (Months) | Weekly Benefit | % of all claims |
| Type 1a | 2,413 | 1.7 | 334 | 4.6% |
| Type 1b | 3,569 | 2.3 | 343 | 27.8% |
| Type 1c | 6,442 | 4.2 | 343 | 13.9% |
| Type 2S | 11,984 | 7.6 | 350 | 31.7% |
| Type 2L | 17,810 | 11.1 | 357 | 21.4% |
| Type 3 | 36,907 | 22.0 | 378 | 0.7% |

**Alberta**
**Automobile Accident Insurance Benefits**
**Income Replacement Benefit for Wage Earners**

**Simulation Summary by Model**

| Current Model | | | | |
|---|---|---|---|---|
| | Undiscounted Severity | Discounted Severity | Duration (Months) | Weekly Benefit |
| Average | 9,974 | 9,903 | 6.6 | 355 |
| Perc. | | | | |
| 10% | 1,333 | 1,324 | 0.8 | 263 |
| 20% | 1,333 | 1,324 | 0.8 | 278 |
| 30% | 3,067 | 3,050 | 1.8 | 344 |
| 40% | 3,498 | 3,479 | 2.8 | 400 |
| 50% | 4,808 | 4,783 | 3.8 | 400 |
| 60% | 8,267 | 8,224 | 5.8 | 400 |
| 70% | 11,733 | 11,673 | 7.8 | 400 |
| 80% | 16,933 | 16,847 | 10.8 | 400 |
| 90% | 27,398 | 27,134 | 19.8 | 400 |
| 95% | 36,000 | 35,644 | 24.0 | 400 |
| 99% | 41,600 | 41,189 | 24.0 | 400 |

| Model 2 | | | | |
|---|---|---|---|---|
| | Undiscounted Severity | Discounted Severity | Duration (Months) | Weekly Benefit |
| Average | 17,405 | 16,743 | 9.9 | 513 |
| Perc. | | | | |
| 10% | 1,439 | 1,430 | 0.8 | 228 |
| 20% | 2,362 | 2,349 | 0.8 | 245 |
| 30% | 3,333 | 3,311 | 1.8 | 308 |
| 40% | 5,032 | 5,005 | 2.8 | 381 |
| 50% | 7,667 | 7,624 | 3.8 | 448 |
| 60% | 11,237 | 11,179 | 5.8 | 450 |
| 70% | 16,313 | 16,230 | 7.8 | 643 |
| 80% | 23,447 | 23,324 | 10.8 | 811 |
| 90% | 34,739 | 34,562 | 19.8 | 1,000 |
| 95% | 50,042 | 49,486 | 28.8 | 1,000 |
| 99% | 116,421 | 113,567 | 56.8 | 1,000 |

| Average by Claim Type (Simulated) | | | | |
|---|---|---|---|---|
| Model 5 | Undiscounted Severity | Discounted Severity | Duration (Months) | Weekly Benefit |
| Type 1a | 3,480 | 3,458 | 2.3 | 355 |
| Type 1b | 3,967 | 3,944 | 2.6 | 358 |
| Type 1c | 6,698 | 6,656 | 4.4 | 359 |
| Type 2S | 11,481 | 11,396 | 7.6 | 353 |
| Type 2L | 17,867 | 17,734 | 11.9 | 350 |
| Type 3 | 36,707 | 36,346 | 24.0 | 353 |

| Average by Claim Type (Simulated) | | | | |
|---|---|---|---|---|
| Model 2 | Undiscounted Severity | Discounted Severity | Duration (Months) | Weekly Benefit |
| Type 1a | 5,234 | 5,202 | 2.3 | 539 |
| Type 1b | 5,962 | 5,927 | 2.6 | 554 |
| Type 1c | 9,687 | 9,624 | 4.5 | 542 |
| Type 2S | 16,298 | 16,148 | 8.7 | 500 |
| Type 2L | 24,617 | 24,396 | 13.4 | 466 |
| Type 3 | 456,801 | 389,335 | 346.5 | 300 |

**Alberta**
**Automobile Accident Insurance Benefits**
**Income Replacement Benefit for Wage Earners**

**Weekly Benefit Summary**

**Assumptions:**

Only people with more than $30k employment income shall have 95% chance to have group benefit
About 73% of all claimants have LTD benefit
LTD coverage level is 66%

| | | | | Group Benefits | IRB Weekly Benefits (Current) | | |
|---|---|---|---|---|---|---|---|
| Gross Income Group | Gross Income used | Gross Weekly Earnings | 80% of GWE | 66% of GWE | Without Group Benefit | With Group Benefit | Group Benefit + IRB |
| $5,000 to $9,999 | | | | | | | |
| $10,000 to $14,999 | $12,500 | $240 | $192 | $159 | $192 | | |
| $15,000 to $19,999 | $17,500 | $337 | $269 | $222 | $269 | | |
| $20,000 to $24,999 | $22,500 | $433 | $346 | $286 | $346 | | |
| $25,000 to $29,999 | $27,500 | $529 | $423 | $349 | $400 | | |
| $30,000 to $34,999 | $32,500 | $625 | $500 | $413 | $400 | $246 | $659 |
| $35,000 to $39,999 | $37,500 | $721 | $577 | $476 | $400 | $263 | $739 |
| $40,000 to $44,999 | $42,500 | $817 | $654 | $539 | $400 | $278 | $818 |
| $45,000 to $49,999 | $47,500 | $913 | $731 | $603 | $400 | $291 | $894 |
| $50,000 to $59,999 | $55,000 | $1,058 | $846 | $698 | $400 | $308 | $1,006 |
| $60,000 to $69,999 | $65,000 | $1,250 | $1,000 | $825 | $400 | $400 | $1,225 |
| $70,000 to $79,999 | $75,000 | $1,442 | $1,154 | $952 | $400 | $400 | $1,352 |
| $80,000 to $89,999 | $85,000 | $1,635 | $1,308 | $1,079 | $400 | $400 | $1,479 |
| $90,000 to $99,999 | $95,000 | $1,827 | $1,462 | $1,206 | $400 | $400 | $1,606 |
| $100,000 and over | $100,000 | $1,923 | $1,538 | $1,269 | $400 | $400 | $1,669 |

| | | | | Group Benefits | Weekly Benefit Model 2 | | |
|---|---|---|---|---|---|---|---|
| Gross Income Group | Net Annual Income | Net Weekly Earnings | 100% of NWE | 66% of GWE after tax | Without Group Benefit | With Group Benefit | Group Benefit + IRB |
| $10,000 to $14,999 | $11,838 | $228 | $228 | | $228 | | |
| $15,000 to $19,999 | $16,020 | $308 | $308 | | $308 | | |
| $20,000 to $24,999 | $19,805 | $381 | $381 | | $381 | | |
| $25,000 to $29,999 | $23,303 | $448 | $448 | | $448 | | |
| $30,000 to $34,999 | $26,800 | $515 | $515 | $367 | $515 | $149 | $515 |
| $35,000 to $39,999 | $30,299 | $583 | $583 | $411 | $583 | $172 | $583 |
| $40,000 to $44,999 | $33,797 | $650 | $650 | $456 | $650 | $194 | $650 |
| $45,000 to $49,999 | $37,295 | $717 | $717 | $500 | $717 | $217 | $717 |
| $50,000 to $59,999 | $42,164 | $811 | $811 | $567 | $811 | $244 | $811 |
| $60,000 to $69,999 | $49,023 | $943 | $943 | $655 | $943 | $287 | $943 |
| $70,000 to $79,999 | $55,973 | $1,076 | $1,076 | $742 | $1,000 | $334 | $1,076 |
| $80,000 to $89,999 | $62,923 | $1,210 | $1,210 | $825 | $1,000 | $385 | $1,210 |
| $90,000 to $99,999 | $69,873 | $1,344 | $1,344 | $912 | $1,000 | $432 | $1,344 |
| $100,000 and over | $73,092 | $1,406 | $1,406 | $956 | $1,000 | $450 | $1,406 |

**Current Model Simulated Cashflow**
Based on 10,000 claims

| Period | | Incremental Paid | Cumulative Paid | LDF |
|---|---|---|---|---|
| Waiting Period Adj | | (3,344,495) | | |
| | 1 | 82,396,089 | 79,051,594 | |
| | 2 | 20,691,845 | 99,743,439 | 1.26175 |
| | 3 | - | 99,743,439 | 1.00000 |
| | 4 | - | 99,743,439 | 1.00000 |
| | 5 | - | 99,743,439 | 1.00000 |
| Total after 5 year | | - | | |
| Grand Total | | 99,743,439 | | |

**Model 2 Simulated Cashflow**
Based on 10,000 claims

| Period | | Incremental Paid | Cumulative Paid | LDF |
|---|---|---|---|---|
| Waiting Period Adj | | (5,538,437) | | |
| | 1 | 114,428,885 | 108,890,448 | |
| | 2 | 20,875,939 | 129,766,387 | 1.19172 |
| | 3 | 8,918,578 | 138,684,965 | 1.06873 |
| | 4 | 4,306,754 | 142,991,719 | 1.03105 |
| | 5 | 2,274,086 | 145,265,805 | 1.01590 |
| Total after 5 year | | 28,780,782 | | |
| Grand Total | | 174,046,587 | | |

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# APPENDIX 3 – COSTING OF MODEL 3

Model 3 Savings Exhibit

**Assumptions:**

| | | | | Coverage | | Cumulative | |
|---|---|---|---|---|---|---|---|
| **1** | **BI Reform Measures** | Savings | | | | | |
| | | 5.98% | | BI | 5.98% | 5.98% | 94.02% |
| **2** | **Mandatory Winter Tires*** | | | | | | |
| | Accident Benefits | 2.50% | | AB | 2.50% | 2.50% | 97.50% |
| | Bodily Injury | 2.50% | | BI | 2.50% | 8.33% | 91.67% |
| | Property Damage | 2.50% | | PD | 2.50% | 2.50% | 97.50% |
| | Collision | 2.50% | | CL | 2.50% | 2.50% | 97.50% |
| | All Perils | 1.67% | assuming of all perils, 2/3 is collision | AP | 1.67% | 1.67% | 98.33% |
| | *Reduction in frequency of accidents | | | | | | |
| **3** | **Increase use of preferred service providers for repairs** | | | | | | |
| | % Increase | 25.00% | | | | | |
| | DCPD ony Discount | 5.00% | **smaller than 5%** | PD | 1.25% | 3.72% | 96.28% |

| | Savings | | | |
|---|---|---|---|---|
| | **1** | **2** | **3** | **Total** |
| **AB** | **0.00%** | **2.50%** | **0.00%** | **2.50%** |
| **BI** | **5.98%** | **2.50%** | **0.00%** | **8.33%** |
| **PD** | **0.00%** | **2.50%** | **1.25%** | **3.72%** |
| **CL** | **0.00%** | **2.50%** | **0.00%** | **2.50%** |
| **AP** | **0.00%** | **1.67%** | **0.00%** | **1.67%** |

**Assumptions:**

| | | | | Coverage | | Cumulative | |
|---|---|---|---|---|---|---|---|
| **1** | **Deduct no fault benefits from tort awards (fully deductible)** | | | | | | |
| | | Saving % | | | | | |
| | Reduction in BI from Med/Rehab | 1.77% | Item 1 in Page 3 | BI | 5.52% | 5.52% | 94.48% |
| | Reduction in BI from Income Replacement Benefits | 3.75% | Item 2 in Page 3 | | | | |
| | Total Reduction in BI | 5.52% | | | | | |
| **2** | **Reduce pre-judgment interest (PJI) from 4% to 1% for non-pecuniary damages** | | Not Applicable | | | | |
| | | Saving % | | BI | 0.00% | 5.52% | 94.48% |
| | Non-Pecuniary PJI as a % of BI Losses | | | | | | |
| | % Reduction in Non-Pecuniary PJI | | | | | | |
| | Total Reduction in BI | 0.00% | Item 3 in Page 3 | | | | |
| **3** | **Cap contingency fee from 33% of settlement to 25%** | | Not Applicable | | | | |
| | | Saving % | | | | | |
| | Contingency Fee as a % of BI Losses | | | BI | 0.00% | 5.52% | 94.48% |
| | % Reduction in Contingency Fee | | | | | | |
| | Total Reduction in BI | 0.00% | Item 4 in Page 3 | | | | |
| **4** | **Reduction in Claims Expenses due to Item (1) & (2) & (3)** | | | | | | |
| | | Saving % | | | | | |
| | ALAE as a % of BI Losses | 8.34% | | BI | 0.46% | 5.98% | 94.02% |
| | % Reduction in BI Reforms | 5.52% | | | | | |
| | Total Reduction in BI | 0.46% | Item 5 in Page 3 | | | | |

**Savings**

| | 1 | 2 | 3 | 4 | Total |
|---|---|---|---|---|---|
| **BI** | **5.52%** | **0.00%** | **0.00%** | **0.46%** | **5.98%** |

**0 Total BI Payment and ALAE**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 0.1 | Aggregate $ Trended to AY 2018 | 116,493,690 | 10,532,461 | 127,026,151 | From Transactional Expense study |
| 0.2 | Medical Expense | 3,170,149 | 236,943 | 3,407,093 | @8.5% trend rate. |
| 0.3 | Loss of Income Wage Earner | 19,370,484 | 0 | 19,370,484 | |
| 0.4 | Non-pecuniary PJI | 5,006,454 | 239,977 | 5,246,431 | |
| 0.5 | Contingency Fee | 34,104,099 | 3,060,071 | 37,164,170 | |
| 0.6 | ALAE | 9,648,681 | 939,728 | 10,588,408 | |
| 0.7 | Disbursement | 3,499,257 | 319,790 | 3,819,047 | |
| 0.8 | Other | 41,694,567 | 5,735,952 | 47,430,518 | |

**1 Calculate BI Savings from Accident Benefit Medical Expense Deduction**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 1.1 | Medical as % of BI | 2.72% | 2.25% | 2.68% | = [0.2] / [0.1] |
| 1.2 | % BI Medical Deducted | 71.02% | 0.00% | 66.08% | * See calculation Note |
| 1.3 | Savings in BI - Medical | 1.93% | 0.00% | 1.77% | = [1.1] x [1.2] |

**2 Calculate BI Savings from IRB Deduction to Loss of Income Claim (Past and Future Income) for Wage Earner ("WE")**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 2.1 | Loss of Income as % of BI (WE) | 16.63% | 0.00% | 15.25% | = [0.3] / [0.1] |
| 2.2 | % Income Claims Deducted | 24.60% | 0.00% | 24.60% | ** See Calculation Note |
| 2.3 | Savings in BI - Loss of Income (WE) | 4.09% | 0.00% | 3.75% | = [2.1] x [2.2] |

**3 Calculate BI Savings from PJI (Prejudgment Interest) Reform** **Not Applicable**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 3.1 | PJI as % of BI | | | | = [0.4] / [0.1] |
| 3.2 | % PJI Reduction due to Reform | | | | No reduction |
| 3.3 | Savings in BI - PJI Reform | | | | = [3.1] x [3.2] |

**4 Calculate Savings from Capping of Contingency Fee** **Not Applicable**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 4.1 | Contingency Fee as % of BI | | | | = [0.5] / [0.1] |
| 4.2 | % Reduction from Capping | | | | No reduction |
| 4.3 | % Reduction from other reforms | | | | |
| 4.4 | Savings in BI - Contingency Fee | | | | =([0.5]-([0.1]*(1 -[3.3])-[0.6]-[0.7])*25%) / [0.1] |

**5 Calculate BI Savings from ALAE**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 5.1 | ALAE as % of BI | 8.28% | 8.92% | 8.34% | = [0.6] / [0.1] |
| 5.2 | % Reduction in ALAE | 6.02% | 0.00% | 5.52% | = 1 - (1 -[1.3]-[2.3]-[3.3]-[4.4]) * [0.1] / [0.6] * [5.1] |
| 5.3 | Savings in BI - ALAE | 0.50% | 0.00% | 0.46% | = [5.1] x [5.2] |

**6 Total Savings BI Reform**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 6.1 | Total Savings in BI | 6.52% | 0.00% | 5.98% | = [1.3] + [2.3] + [3.3] + [4.4] + [5.3] |

Assumptions:

1 BI Medical/Rehab payment is deducted by AB Medical, with an aggregate cap of $500,000. Excess Medical/Rehab stays in BI.
2 BI Loss of Income payment is deducted by Income Replacement Benefit (IRB). For wage earner, benefit is calculated lesser of $400 or 80% gross income weekly, maximum 2 years; for non-wage earner, benefit is maximum $135 weekly, maximum 26 weeks. Excess Loss of Income stays in BI. There are no non-wage earners within selection criteria, assumed no savings are applicable.
3 No PJI reform.
4 No Contingency fee reduction.
5 ALAE reduction is assumed to be proportional to the reduction in loss payment from all above reforms.

| * Derivation of Medical Expense Deduction | | In Alberta | Outside of Alberta | Total | |
|---|---|---|---|---|---|
| | # Claimants Selected | 356 | 12 | 368 | |
| (1) | $ Trended Loss & ALAE Sample Selected | 44,800,808 | 4,398,345 | 49,199,153 | |
| (2) | Medical Expense in BI wo Ded. | 3,170,149 | 236,943 | 3,407,093 | |
| (3) | Medical Expense Deducted by AB | 2,251,526 | 0 | 2,251,526 | |
| (4) | % Deducted | 71.02% | 0.00% | 66.08% | = (3) / (2) |

| ** Derivation of Income Loss Deduction | | In Alberta | Outside of Alberta | Total | |
|---|---|---|---|---|---|
| | # Claimants Selected | 373 | 0 | 373 | |
| (1) | $ Trended Loss & ALAE Sample Selected | 51,023,194 | 0 | 51,023,194 | |
| (2) | Loss of Income Adj. @2018 Lvl wo Ded. | 7,820,260 | 0 | 7,820,260 | |
| (3) | IRB @ 2018 Lvl | 1,923,413 | 0 | 1,923,413 | |
| (4) | % Deducted | 24.60% | 0.00% | 24.60% | = (3) / (2) |

# APPENDIX 4 – COSTING OF MODEL 4

Model 4 Savings Exhibit

**Model 4 -Transitional model**
**Accident Year 2018 Level**

**Assumptions:**

| | | | | Coverage | | Cumulative | |
|---|---|---|---|---|---|---|---|
| **1** | **BI Reform Measures** | Savings | | | | | |
| | | 11.05% | | BI | 11.05% | 11.05% | 88.95% |
| **2** | **Mandatory Winter Tires*** | Savings | | | | | |
| | Accident Benefits | 2.50% | | AB | 2.50% | 2.50% | 97.50% |
| | Bodily Injury | 2.50% | | BI | 2.50% | 13.28% | 86.72% |
| | Property Damage | 2.50% | | PD | 2.50% | 2.50% | 97.50% |
| | Collision | 2.50% | | CL | 2.50% | 2.50% | 97.50% |
| | All Perils | 1.67% | assuming of all perils, 2/3 is collision | AP | 1.67% | 1.67% | 98.33% |
| | *Reduction in frequency of accidents | | | | | | |
| **3** | **Increase use of preferred service providers for repairs** | | | | | | |
| | % Increase | 25.00% | | | | | |
| | DCPD ony Discount | 5.00% | **smaller than 5%** | PD | 1.25% | 3.72% | 96.28% |

| | Savings | | | |
|---|---|---|---|---|
| | **1** | **2** | **3** | **Total** |
| **AB** | **0.00%** | **2.50%** | **0.00%** | **2.50%** |
| **BI** | **11.05%** | **2.50%** | **0.00%** | **13.28%** |
| **PD** | **0.00%** | **2.50%** | **1.25%** | **3.72%** |
| **CL** | **0.00%** | **2.50%** | **0.00%** | **2.50%** |
| **AP** | **0.00%** | **1.67%** | **0.00%** | **1.67%** |

**Assumptions:**

| | | | | Coverage | | Cumulative | |
|---|---|---|---|---|---|---|---|
| 1 | **Deduct no fault benefits from tort awards (fully deductible)** | | Not Applicable | | | | |
| | | Saving % | | | | | |
| | Reduction in BI from Med/Rehab | | Item 1 in Page 3 | BI | 0.00% | 0.00% | 100.00% |
| | Reduction in BI from Income Replacement Benefits | | Item 2 in Page 3 | | | | |
| | Total Reduction in BI | 0.00% | | | | | |
| 2 | **Reduce pre-judgment interest (PJI) from 4% to 1% for non-pecuniary damages** | | | | | | |
| | | Saving % | | BI | 2.96% | 2.96% | 97.04% |
| | Non-Pecuniary PJI as a % of BI Losses | 4.13% | | | | | |
| | % Reduction in Non-Pecuniary PJI | 71.56% | | | | | |
| | Total Reduction in BI | 2.96% | Item 3 in Page 3 | | | | |
| 3 | **Cap contingency fee from 33% of settlement to 25%** | | | | | | |
| | | Saving % | | | | | |
| | Contingency Fee as a % of BI Losses | 29.26% | | BI | 7.25% | 10.20% | 89.80% |
| | % Reduction in Contingency Fee | 24.77% | | | | | |
| | Total Reduction in BI | 7.25% | Item 4 in Page 3 | | | | |
| 4 | **Reduction in Claims Expenses due to Item (1) & (2) & (3)** | Saving % | | | | | |
| | ALAE as a % of BI Losses | 8.34% | | BI | 0.85% | 11.05% | 88.95% |
| | % Reduction in BI Reforms | 10.20% | | | | | |
| | Total Reduction in BI | 0.85% | Item 5 in Page 3 | | | | |

**Savings**

| | 1 | 2 | 3 | 4 | Total |
|---|---|---|---|---|---|
| **BI** | **0.00%** | **2.96%** | **7.25%** | **0.85%** | **11.05%** |

**0 Total BI Payment and ALAE**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 0.1 | Aggregate $ Trended to AY 2018 | 116,493,690 | 10,532,461 | 127,026,151 | From Transactional Expense study |
| 0.2 | Medical Expense | 3,170,149 | 236,943 | 3,407,093 | @8.5% trend rate. |
| 0.3 | Loss of Income Wage Earner | 19,370,484 | 0 | 19,370,484 | |
| 0.4 | Non-pecuniary PJI | 5,006,454 | 239,977 | 5,246,431 | |
| 0.5 | Contingency Fee | 34,104,099 | 3,060,071 | 37,164,170 | |
| 0.6 | ALAE | 9,648,681 | 939,728 | 10,588,408 | |
| 0.7 | Disbursement | 3,499,257 | 319,790 | 3,819,047 | |
| 0.8 | Other | 41,694,567 | 5,735,952 | 47,430,518 | |
| | | 99,590,913 | 24,897,728 | | |

**1 Calculate BI Savings from Accident Benefit Medical Expense Deduction** **Not Applicable**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 1.1 | Medical as % of BI | | | | = [0.2] / [0.1] |
| 1.2 | % BI Medical Deducted | | | | No deduction |
| 1.3 | Savings in BI - Medical | | | | = [1.1] x [1.2] |

**2 Calculate BI Savings from IRB Deduction to Loss of Income Claim (Past and Future Income) for Wage Earner ("WE")** **Not Applicable**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 2.1 | Loss of Income as % of BI (WE) | | | | = [0.3] / [0.1] |
| 2.2 | % Income Claims Deducted | | | | No deduction |
| 2.3 | Savings in BI - Loss of Income (WE) | | | | = [2.1] x [2.2] |

**3 Calculate BI Savings from PJI (Prejudgment Interest) Reform**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 3.1 | PJI as % of BI | 4.30% | 2.28% | 4.13% | = [0.4] / [0.1] |
| 3.2 | % PJI Reduction due to Reform | 75.00% | 0.00% | 71.56% | * See Calculation Note |
| 3.3 | Savings in BI - PJI Reform | 3.22% | 0.00% | 2.96% | = [3.1] x [3.2] |

**4 Calculate Savings from Capping of Contingency Fee**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 4.1 | Contingency Fee as % of BI | 29.28% | 29.05% | 29.26% | = [0.5] / [0.1] |
| 4.2 | % Reduction from Capping | 24.24% | 0.00% | 22.25% | = 1 - 25%/33% in Alberta |
| 4.3 | % Reduction from other reforms | 2.75% | 0.00% | 2.53% | reduction from PJI reform |
| 4.4 | Savings in BI - Contingency Fee | 7.90% | 0.00% | 7.25% | =([0.5]-([0.1]*(1 -[3.3])-[0.6]-[0.7])*25%) / [0.1] |

**5 Calculate BI Savings from ALAE**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 5.1 | ALAE as % of BI | 8.28% | 8.92% | 8.34% | = [0.6] / [0.1] |
| 5.2 | % Reduction in ALAE | 11.13% | 0.00% | 10.20% | = 1 - (1 -[1.3]-[2.3]-[3.3]-[4.4]) * [0.1] / [0.6] * [5.1] |
| 5.3 | ALAE Savings | 0.92% | 0.00% | 0.85% | = [5.1] x [5.2] |

**6 Total Savings BI Reform**

| | | In Alberta | Outside of Alberta | Total | Reference |
|---|---|---|---|---|---|
| 6.1 | Total Savings in BI | 12.05% | 0.00% | 11.05% | = [1.3] + [2.3] + [3.3] + [4.4] + [5.3] |

Assumptions:

1 No BI Medical deduction applicable.
2 No BI Loss of Income benefit deduction applicable.

3 The non-pecuniary PJI reform assumes the interest rate reduce from 4% annually to 1%.
4 Contingency Fee assumed to be capped at 25% compare to 33%.
5 ALAE reduction is assumed to be proportional to the reduction in loss payment from all above reforms.

| * Derivation of PJI Reform Reduction | | In Alberta | Outside of Alberta | Total | |
|---|---|---|---|---|---|
| | # Claimants Selected | 561 | 7 | 568 | |
| (1) | $ Trended Loss & ALAE Sample Selected | 77,521,468 | 4,545,580 | 82,067,048 | |
| (2) | Trended Non-pecuniary PJI @ 4% | 4,995,975 | 239,977 | 5,235,952 | |
| (3) | Non-pecuniary PJI Reduction @ 1% | 3,746,982 | 0 | 3,746,982 | |
| (4) | % Reduction | 75.00% | 0.00% | 71.56% | = (3) / (2) |

# APPENDIX 5 – CURRENT RATE ADEQUACY

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| | |
|---|---|
| Appendix 5.1 | Current Rate Adequacy |
| Appendix 5.2 | Discounted Ultimate Loss Cost (including ULAE and Health Levy; excluding CAT Loading) |
| Appendix 5.3 | Selected Ultimate Loss Cost (including ULAE and Health Levy; excluding CAT Loading) |
| Appendix 5.4 | 2016-2018 Ultimate Loss Cost (including ULAE, Health Levy and CAT Loading) |
| Appendix 5.5 | Specified Peril CAT Loading |
| Appendix 5.6 | Selected Payment Pattern |
| Appendix 5.7 | AIRB Approved Rate Changes |
| Appendix 5.8 | Covid-19 Factor |
| Appendix 5.9 | March 31, 2020 Written Premium per Vehicle |
| Appendix 5.10 | Total Canadian P&C Investment Yield |

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# APPENDIX 5.1

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Current Rate Adequacy

*From Industry Expense Report (Bulletin No: 2019-06)*

| | % of DWP | Distribution of Total Expenses |
|---|---|---|
| Commissions | 12.6% | 48.0% |
| Taxes | 3.8% | 14.5% |
| Other Acquisition Expenses | 2.6% | 9.8% |
| General Expenses | 7.3% | 27.7% |
| Total Expenses | 26.2% | 100.0% |

Target Profit is 7%. It is based on March 27, 2020 Bulletin:01-2020 from Automobile Insurance Rate Board.

Discounted to Jul 1, 2022

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

Location: Alberta

**Per Vehicle**

| **Third Party Liability** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| BI Claims[2,3] | 58.6% | 622.99 | 0.8600 | 535.75 | 50.4% |
| PD Claims[2] | 17.2% | 182.49 | 0.9565 | 174.54 | 16.4% |
| Commissions | 12.6% | 133.76 | 1.0000 | 133.76 | 12.6% |
| Taxes | 3.8% | 40.41 | 1.0000 | 40.41 | 3.8% |
| Other Acquisition Expenses | 2.6% | 27.33 | 1.0000 | 27.33 | 2.6% |
| General Expenses | 7.3% | 77.20 | 1.0000 | 77.20 | 7.3% |
| Total Claims & Expenses | 102.0% | 1,084.17 | | 988.99 | 93.0% |
| Number of written vehicles[4] | 2,766,202 | | Target Profit | 74.44 | 7.0% |
| | | | Target Premium | 1,063.43 | 100.0% |
| Approved Rate Change @ Q1 2020 | 1.260 | | March 2020 GISA Premium[1] | 899.51 | |
| | | | Inadequate by | (163.92) | -18.2% |

[3] BI claims per vehicle (loss cost) includes ULAE and Health Levy.

**Per Vehicle**

| **Accident Benefit** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims[2] | 70.8% | 91.42 | 0.9432 | 86.23 | 66.8% |
| Commissions | 12.6% | 16.24 | 1.0000 | 16.24 | 12.6% |
| Taxes | 3.8% | 4.91 | 1.0000 | 4.91 | 3.8% |
| Other Acquisition Expenses | 2.6% | 3.32 | 1.0000 | 3.32 | 2.6% |
| General Expenses | 7.3% | 9.37 | 1.0000 | 9.37 | 7.3% |
| Total Claims & Expenses | 97.0% | 125.25 | | 120.06 | 93.0% |
| Number of written vehicles[4] | 2,767,256 | | Target Profit | 9.04 | 7.0% |
| | | | Target Premium | 129.10 | 100.0% |
| Approved Rate Change @ Q1 2020 | 1.260 | | March 2020 GISA Premium[1] | 76.90 | |
| | | | Inadequate by | (52.20) | -67.9% |

*From Industry Expense Report (Bulletin No: 2019-06)*

| | % of DWP | Distribution of Total Expenses |
|---|---|---|
| Commissions | 12.6% | 48.0% |
| Taxes | 3.8% | 14.5% |
| Other Acquisition Expenses | 2.6% | 9.8% |
| General Expenses | 7.3% | 27.7% |
| Total Expenses | 26.2% | 100.0% |

Target Profit is 7%. It is based on March 27, 2020 Bulletin:01-2020 from Automobile Insurance Rate Board.

Discounted to Jul 1, 2022

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

Location: Alberta

**Per Vehicle**

| **Underinsured Motorists** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims[2] | 82.2% | 5.78 | 0.8129 | 4.70 | 66.8% |
| Commissions | 12.6% | 0.88 | 1.0000 | 0.88 | 12.6% |
| Taxes | 3.8% | 0.27 | 1.0000 | 0.27 | 3.8% |
| Other Acquisition Expenses | 2.6% | 0.18 | 1.0000 | 0.18 | 2.6% |
| General Expenses | 7.3% | 0.51 | 1.0000 | 0.51 | 7.3% |
| Total Claims & Expenses | 108.4% | 7.62 | | 6.54 | 93.0% |
| Number of written vehicles[4] | 2,710,549 | | Target Profit | 0.49 | 7.0% |
| | | | Target Premium | 7.03 | 100.0% |
| Approved Rate Change @ Q1 2020 | 1.083 | | March 2020 GISA Premium[1] | 32.38 | |
| | | | Adequate by | 25.34 | 78.3% |

**Per Vehicle**

| **Collision** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims[2] | 68.8% | 297.73 | 0.9706 | 288.97 | 66.8% |
| Commissions | 12.6% | 54.42 | 1.0000 | 54.42 | 12.6% |
| Taxes | 3.8% | 16.44 | 1.0000 | 16.44 | 3.8% |
| Other Acquisition Expenses | 2.6% | 11.12 | 1.0000 | 11.12 | 2.6% |
| General Expenses | 7.3% | 31.41 | 1.0000 | 31.41 | 7.3% |
| Total Claims & Expenses | 95.0% | 411.11 | | 402.36 | 93.0% |
| Number of written vehicles[4] | 2,041,611 | | Target Profit | 30.28 | 7.0% |
| | | | Target Premium | 432.64 | 100.0% |
| Approved Rate Change @ Q1 2020 | 1.083 | | March 2020 GISA Premium[1] | 425.86 | |
| | | | Inadequate by | (6.78) | -1.6% |

*From Industry Expense Report (Bulletin No: 2019-06)*

| | % of DWP | Distribution of Total Expenses |
|---|---|---|
| Commissions | 12.6% | 48.0% |
| Taxes | 3.8% | 14.5% |
| Other Acquisition Expenses | 2.6% | 9.8% |
| General Expenses | 7.3% | 27.7% |
| Total Expenses | 26.2% | 100.0% |

Target Profit is 7%. It is based on March 27, 2020 Bulletin:01-2020 from Automobile Insurance Rate Board.

Discounted to Jul 1, 2022

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

Location: Alberta

**Per Vehicle**

| **Comprehensive** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims excluding CAT[2] | 44.1% | 185.43 | 0.9650 | 178.95 | 42.5% |
| CAT Provision[5] | 25.1% | 105.70 | 0.9650 | 102.00 | 24.2% |
| Commissions | 12.6% | 52.91 | 1.0000 | 52.91 | 12.6% |
| Taxes | 3.8% | 15.98 | 1.0000 | 15.98 | 3.8% |
| Other Acquisition Expenses | 2.6% | 10.81 | 1.0000 | 10.81 | 2.6% |
| General Expenses | 7.3% | 30.53 | 1.0000 | 30.53 | 7.3% |
| Total Claims & Expenses | 95.4% | 401.36 | | 391.18 | 93.0% |
| Number of written vehicles[4] | 2,406,942 | | Target Profit | 29.44 | 7.0% |
| | | | Target Premium | 420.62 | 100.0% |
| Approved Rate Change @ Q1 2020 | 1.083 | | March 2020 GISA Premium[1] | 268.07 | |
| | | | Inadequate by | (152.56) | -56.9% |

**Per Vehicle**

| **Specified Perils** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims excluding CAT[2] | 45.3% | 69.05 | 0.9662 | 66.72 | 43.8% |
| CAT Provision[6] | 23.8% | 36.25 | 0.9662 | 35.03 | 23.0% |
| Commissions | 12.6% | 19.16 | 1.0000 | 19.16 | 12.6% |
| Taxes | 3.8% | 5.79 | 1.0000 | 5.79 | 3.8% |
| Other Acquisition Expenses | 2.6% | 3.91 | 1.0000 | 3.91 | 2.6% |
| General Expenses | 7.3% | 11.06 | 1.0000 | 11.06 | 7.3% |
| Total Claims & Expenses | 95.3% | 145.22 | | 141.67 | 93.0% |
| Number of written vehicles[4] | 21,786 | | Target Profit | 10.66 | 7.0% |
| | | | Target Premium | 152.33 | 100.0% |
| Approved Rate Change @ Q1 2020 | 1.083 | | March 2020 GISA Premium[1] | 106.72 | |
| | | | Inadequate by | (45.61) | -42.7% |

[6] See Appendix 5.5. The CAT loading is 52.5% of normal claims.

*From Industry Expense Report (Bulletin No: 2019-06)*

| | % of DWP | Distribution of Total Expenses |
|---|---|---|
| Commissions | 12.6% | 48.0% |
| Taxes | 3.8% | 14.5% |
| Other Acquisition Expenses | 2.6% | 9.8% |
| General Expenses | 7.3% | 27.7% |
| Total Expenses | 26.2% | 100.0% |

Target Profit is 7%. It is based on March 27, 2020 Bulletin:01-2020 from Automobile Insurance Rate Board.

Discounted to Jul 1, 2022

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

Location: Alberta

**Per Vehicle**

| **All Perils** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims excluding CAT[2] | 57.5% | 522.74 | 0.9663 | 505.14 | 55.6% |
| CAT Provision[7] | 11.6% | 105.55 | 0.9663 | 102.00 | 11.2% |
| Commissions | 12.6% | 114.34 | 1.0000 | 114.34 | 12.6% |
| Taxes | 3.8% | 34.54 | 1.0000 | 34.54 | 3.8% |
| Other Acquisition Expenses | 2.6% | 23.36 | 1.0000 | 23.36 | 2.6% |
| General Expenses | 7.3% | 65.99 | 1.0000 | 65.99 | 7.3% |
| Total Claims & Expenses | 95.3% | 866.51 | | 845.36 | 93.0% |
| Number of written vehicles[4] | 20,919 | | Target Profit | 63.63 | 7.0% |
| | | | Target Premium | 908.99 | 100.0% |
| Approved Rate Change @ Q1 2020 | 1.083 | | March 2020 GISA Premium[1] | 806.54 | |
| | | | Inadequate by | (102.45) | -12.7% |

[7] All Perils CAT = Comprehensive CAT

**Per Vehicle**

| **Grand Total** [8] | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims excluding CAT[2] | 68.3% | 1,289.78 | 0.9118 | 1,176.03 | 62.3% |
| CAT Provision | 4.9% | 93.05 | 0.9118 | 84.84 | 4.5% |
| Commissions | 12.6% | 237.45 | 1.0000 | 237.45 | 12.6% |
| Taxes | 3.8% | 71.73 | 1.0000 | 71.73 | 3.8% |
| Other Acquisition Expenses | 2.6% | 48.51 | 1.0000 | 48.51 | 2.6% |
| General Expenses | 7.3% | 137.03 | 1.0000 | 137.03 | 7.3% |
| Total Claims & Expenses | 99.5% | 1,877.56 | | 1,755.59 | 93.0% |
| Number of written vehicles[4] | 2,766,202 | | Target Profit | 132.14 | 7.0% |
| | | | Target Premium | 1,887.73 | 100.0% |
| | | | March 2020 GISA Premium[1] | 1,562.66 | |
| | | | Inadequate by | (325.07) | -20.8% |

[8] TPL + AB + Underinsured Motorists + Collision + Comprehensive + Specified Perils + All Perils with BI earned vehicles as the base

*From Industry Expense Report (Bulletin No: 2019-06)*

| | % of DWP | Distribution of Total Expenses |
|---|---|---|
| Commissions | 12.6% | 48.0% |
| Taxes | 3.8% | 14.5% |
| Other Acquisition Expenses | 2.6% | 9.8% |
| General Expenses | 7.3% | 27.7% |
| Total Expenses | 26.2% | 100.0% |

Target Profit is 7%. It is based on March 27, 2020 Bulletin:01-2020 from Automobile Insurance Rate Board.

Discounted to Jul 1, 2022

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

Location: Alberta

**Per Vehicle**

| **Full Package** [9] | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims excluding CAT[2] | 67.5% | 1,385.84 | 0.9158 | 1,269.14 | 61.8% |
| CAT Provision | 5.1% | 105.70 | 0.9650 | 102.00 | 5.0% |
| Commissions | 12.6% | 258.22 | 1.0000 | 258.22 | 12.6% |
| Taxes | 3.8% | 78.00 | 1.0000 | 78.00 | 3.8% |
| Other Acquisition Expenses | 2.6% | 52.75 | 1.0000 | 52.75 | 2.6% |
| General Expenses | 7.3% | 149.02 | 1.0000 | 149.02 | 7.3% |
| Total Claims & Expenses | 98.9% | 2,029.52 | | 1,909.12 | 93.0% |
| | | | Target Profit | 143.70 | 7.0% |
| | | | Target Premium | 2,052.82 | 100.0% |
| | | | March 2020 GISA Premium[1] | 1,702.71 | |
| | | | Inadequate by | (350.11) | -20.6% |

[9] TPL + AB + Underinsured Motorists + Collision + Comprehensive

[1] [2018 GWP from 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16)] x [1 + (Approved Rate Change)]. See Appendix 5.7 for Approve Rate Change

[2] Refer to Appendix 5.2; includes ULAE and Health Levy; excludes CAT

[4] From 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16)

[5] Benchmark catastrophe provision of 57% is from the Semi-annual Review of Industry Experience - Final Report as of June 30, 2019, Private Passenger Vehicles, Alberta Automobile Insurance Rate Board March 27, 2020.

# APPENDIX 5.2

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Discounted Ultimate Loss Cost (including ULAE and Health Levy; excluding CAT Loading)

Undiscounted and Discounted Loss Cost Location: Alberta
Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023
Discounted to Jul 1, 2022
Includes ULAE and Health Levy; excludes CAT

| Undiscounted | BI | PD | AB | UM | CL | CM | SP | AP | Grand Total |
|---|---|---|---|---|---|---|---|---|---|
| Selected Ult Loss Cost | 622.99 | 182.49 | 91.42 | 5.78 | 297.73 | 185.43 | 69.05 | 522.74 | 1,289.78 |

Payment Pattern for Accident Year using as of December 31, 2018 data

| CY | BI | PD | AB | UM | CL | CM | SP | AP |
|---|---|---|---|---|---|---|---|---|
| 2022 | 3.75% | 55.15% | 43.90% | 0.30% | 98.62% | 79.55% | 84.06% | 86.02% |
| 2023 | 10.40% | 39.92% | 38.87% | 1.84% | 1.38% | 19.90% | 15.21% | 12.98% |
| 2024 | 14.53% | 4.05% | 9.89% | 5.06% | 0.00% | 0.52% | 0.61% | 0.25% |
| 2025 | 15.59% | 0.38% | 1.84% | 10.70% | 0.00% | 0.02% | 0.12% | 0.25% |
| 2026 | 15.46% | 0.19% | 1.26% | 13.71% | 0.00% | 0.01% | 0.00% | 0.25% |
| 2027 | 13.09% | 0.17% | 1.25% | 14.03% | 0.00% | 0.00% | 0.00% | 0.13% |
| 2028 | 9.84% | 0.11% | 0.62% | 14.03% | 0.00% | 0.00% | 0.00% | 0.12% |
| 2029 | 6.57% | 0.01% | 0.46% | 11.66% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2030 | 4.08% | 0.01% | 0.46% | 11.66% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2031 | 2.76% | 0.01% | 0.46% | 5.71% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2032 | 1.43% | 0.00% | 0.20% | 2.57% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2033 | 0.95% | 0.00% | 0.20% | 2.19% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2034 | 0.99% | 0.00% | 0.20% | 2.18% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2035 | 0.14% | 0.00% | 0.19% | 2.18% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2036 | 0.14% | 0.00% | 0.05% | 2.18% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2037 | 0.14% | 0.00% | 0.05% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2038 | 0.14% | 0.00% | 0.05% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2039 | 0.00% | 0.00% | 0.05% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

Payment Pattern for Policy Year

| CY | BI | PD | AB | UM | CL | CM | SP | AP |
|---|---|---|---|---|---|---|---|---|
| 2022 | 1.88% | 27.58% | 21.95% | 0.15% | 49.31% | 39.78% | 42.03% | 43.01% |
| 2023 | 7.08% | 47.54% | 41.39% | 1.07% | 50.00% | 49.73% | 49.64% | 49.50% |
| 2024 | 12.47% | 21.99% | 24.38% | 3.45% | 0.69% | 10.21% | 7.91% | 6.62% |
| 2025 | 15.06% | 2.22% | 5.87% | 7.88% | 0.00% | 0.27% | 0.37% | 0.25% |
| 2026 | 15.53% | 0.29% | 1.55% | 12.21% | 0.00% | 0.02% | 0.06% | 0.25% |
| 2027 | 14.28% | 0.18% | 1.26% | 13.87% | 0.00% | 0.01% | 0.00% | 0.19% |
| 2028 | 11.47% | 0.14% | 0.94% | 14.03% | 0.00% | 0.00% | 0.00% | 0.13% |
| 2029 | 8.21% | 0.06% | 0.54% | 12.85% | 0.00% | 0.00% | 0.00% | 0.06% |
| 2030 | 5.33% | 0.01% | 0.46% | 11.66% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2031 | 3.42% | 0.01% | 0.46% | 8.69% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2032 | 2.10% | 0.01% | 0.33% | 4.14% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2033 | 1.19% | 0.00% | 0.20% | 2.38% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2034 | 0.97% | 0.00% | 0.20% | 2.19% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2035 | 0.57% | 0.00% | 0.20% | 2.18% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2036 | 0.14% | 0.00% | 0.12% | 2.18% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2037 | 0.14% | 0.00% | 0.05% | 1.09% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2038 | 0.14% | 0.00% | 0.05% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2039 | 0.07% | 0.00% | 0.05% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2040 | 0.00% | 0.00% | 0.03% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

Undiscounted and Discounted Loss Cost Location: Alberta
Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023
Discounted to Jul 1, 2022
Includes ULAE and Health Levy; excludes CAT

| Undiscounted | BI | PD | AB | UM | CL | CM | SP | AP | Grand Total |
|---|---|---|---|---|---|---|---|---|---|
| Selected Ult Loss Cost | 622.99 | 182.49 | 91.42 | 5.78 | 297.73 | 185.43 | 69.05 | 522.74 | 1,289.78 |

**Undiscounted**

| Year ending Jul 1, 2022 | **BI** | **PD** | **AB** | **UM** | **CL** | **CM** | **SP** | **AP** | **Grand Total** | **Full Package [1]** |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11.68 | 50.32 | 20.07 | 0.01 | 146.81 | 73.75 | 29.02 | 224.83 | | |
| 2 | 44.08 | 86.75 | 37.83 | 0.06 | 148.87 | 92.21 | 34.27 | 258.76 | | |
| 3 | 77.66 | 40.12 | 22.29 | 0.20 | 2.05 | 18.93 | 5.46 | 34.58 | | |
| 4 | 93.82 | 4.04 | 5.36 | 0.46 | 0.00 | 0.50 | 0.25 | 1.31 | | |
| 5 | 96.72 | 0.52 | 1.42 | 0.71 | 0.00 | 0.03 | 0.05 | 1.31 | | |
| 6 | 88.93 | 0.33 | 1.15 | 0.80 | 0.00 | 0.01 | 0.00 | 0.99 | | |
| 7 | 71.43 | 0.26 | 0.85 | 0.81 | 0.00 | 0.00 | 0.00 | 0.65 | | |
| 8 | 51.12 | 0.11 | 0.49 | 0.74 | 0.00 | 0.00 | 0.00 | 0.31 | | |
| 9 | 33.17 | 0.02 | 0.42 | 0.67 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 10 | 21.31 | 0.02 | 0.42 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 11 | 13.05 | 0.00 | 0.30 | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 12 | 7.41 | 0.00 | 0.18 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 13 | 6.04 | 0.00 | 0.18 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 14 | 3.52 | 0.00 | 0.18 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 15 | 0.87 | 0.00 | 0.11 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 16 | 0.87 | 0.00 | 0.05 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 17 | 0.87 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 18 | 0.44 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 19 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| Unpaid | 611.31 | 132.17 | 71.35 | 5.77 | 150.92 | 111.68 | 40.03 | 297.91 | | |
| Ultimate Loss Cost[2] | **622.99** | **182.49** | **91.42** | **5.78** | **297.73** | **185.43** | **69.05** | **522.74** | **1,289.78** | **1,385.84** |

**Discounted**

| Discount Rate | 3.00% | 3.00% | 3.00% | 3.00% | 3.00% | 3.00% | 3.00% | 3.00% | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year ending Jul 1, 2022 | **BI** | **PD** | **AB** | **UM** | **CL** | **CM** | **SP** | **AP** | **Grand Total** | **Full Package [1]** |
| 1 | 11.51 | 49.58 | 19.78 | 0.01 | 144.66 | 72.67 | 28.59 | 221.53 | | |
| 2 | 42.17 | 82.99 | 36.19 | 0.06 | 142.41 | 88.21 | 32.78 | 247.54 | | |
| 3 | 72.13 | 37.26 | 20.70 | 0.19 | 1.90 | 17.58 | 5.07 | 32.12 | | |
| 4 | 84.60 | 3.64 | 4.83 | 0.41 | 0.00 | 0.45 | 0.23 | 1.18 | | |
| 5 | 84.67 | 0.46 | 1.24 | 0.62 | 0.00 | 0.03 | 0.04 | 1.15 | | |
| 6 | 75.59 | 0.28 | 0.98 | 0.68 | 0.00 | 0.01 | 0.00 | 0.84 | | |
| 7 | 58.94 | 0.21 | 0.70 | 0.67 | 0.00 | 0.00 | 0.00 | 0.54 | | |
| 8 | 40.96 | 0.09 | 0.39 | 0.59 | 0.00 | 0.00 | 0.00 | 0.25 | | |
| 9 | 25.80 | 0.02 | 0.33 | 0.52 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 10 | 16.09 | 0.02 | 0.32 | 0.38 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 11 | 9.57 | 0.00 | 0.22 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 12 | 5.27 | 0.00 | 0.13 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 13 | 4.17 | 0.00 | 0.12 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 14 | 2.36 | 0.00 | 0.12 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 15 | 0.57 | 0.00 | 0.07 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 16 | 0.55 | 0.00 | 0.03 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 17 | 0.53 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 18 | 0.26 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 19 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| Ultimate Loss Cost | **535.75** | **174.54** | **86.23** | **4.70** | **288.97** | **178.95** | **66.72** | **505.14** | **1,176.03** | **1,269.14** |

[1] TPL + AB + Underinsured Motorists + Collision + Comprehensive
[2] Appendix 5.3

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# APPENDIX 5.3

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Selected Ultimate Loss Cost (including ULAE and Health Levy; excluding CAT Loading)

# Alberta Automobile Insurance
# Undiscounted Loss Cost

| | Weights | | |
|---|---|---|---|
| | 0% | 40% | 60% |

## Ultimate Loss Cost **excluding** ULAE & Health Levy and **excluding** CAT

| | GISA | | | Trended to January 1, 2023 | | | Weighted | Covid-19 | **Current** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Coverage | 2016 | 2017 | 2018 | 2016 | 2017 | 2018 | Average | Factor | **Model** | Source |
| BI | 375.24 | 380.78 | 374.91 | 597.60 | 561.50 | 511.90 | 531.74 | 2.50% | **518.45** | Page 2 |
| PD | 145.81 | 158.38 | 159.86 | 160.62 | 171.90 | 170.93 | 171.32 | 2.50% | **167.04** | Page 3 |
| AB | 47.74 | 55.06 | 59.26 | 81.13 | 86.24 | 85.54 | 85.82 | 2.50% | **83.68** | Page 4 |
| UM | 6.03 | 5.03 | 4.09 | 7.79 | 6.24 | 4.88 | 5.43 | 2.50% | **5.29** | Page 5 |
| Col. | 228.74 | 249.56 | 246.32 | 268.56 | 285.86 | 275.27 | 279.51 | 2.50% | **272.53** | Page 6 |
| Comp. | 102.22 | 31.66 | 37.23 | 200.10 | 180.70 | 162.41 | 169.73 | 0.00% | **169.73** | Page 7 |
| SP | 45.77 | 44.67 | 45.82 | 71.06 | 64.81 | 62.13 | 63.20 | 0.00% | **63.20** | Page 8 |
| AP | 382.58 | 388.26 | 410.58 | 493.68 | 481.73 | 489.83 | 486.59 | 1.67% | **478.48** | Page 9 |
| Grand Total[1] | 864.68 | 899.44 | 890.59 | 1,226.84 | 1,200.32 | 1,122.92 | 1,153.86 | 2.19% | **1,128.62** | Page 10 |
| Full package[2] | 905.78 | 880.48 | 881.66 | 1,315.80 | 1,292.45 | 1,210.94 | 1,243.55 | 2.16% | **1,216.72** | Page 11 |

## Ultimate Loss Cost **including** ULAE & Health Levy and **excluding** CAT

| | GISA | | | Trended to January 1, 2023 | | | Weighted | Covid-19 | **Current** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Coverage | 2016 | 2017 | 2018 | 2016 | 2017 | 2018 | Average | Factor | **Model** | Source |
| BI | 444.35 | 453.12 | 456.64 | 712.47 | 668.62 | 619.19 | 638.96 | 2.50% | **622.99** | Page 2 |
| PD | 158.19 | 172.88 | 175.95 | 175.48 | 187.80 | 186.74 | 187.17 | 2.50% | **182.49** | Page 3 |
| AB | 51.78 | 60.10 | 65.21 | 88.63 | 94.22 | 93.45 | 93.76 | 2.50% | **91.42** | Page 4 |
| UM | 6.55 | 5.49 | 4.51 | 8.51 | 6.82 | 5.33 | 5.93 | 2.50% | **5.78** | Page 5 |
| Col. | 248.14 | 272.40 | 271.12 | 293.40 | 312.31 | 300.73 | 305.36 | 2.50% | **297.73** | Page 6 |
| Comp. | 255.06 | 174.06 | 175.63 | 218.61 | 197.42 | 177.43 | 185.43 | 0.00% | **185.43** | Page 7 |
| SP | 64.83 | 59.97 | 57.89 | 77.63 | 70.80 | 67.88 | 69.05 | 0.00% | **69.05** | Page 8 |
| AP | 499.89 | 456.51 | 503.27 | 539.34 | 526.29 | 535.14 | 531.60 | 1.67% | **522.74** | Page 9 |
| Grand Total[1] | 1,074.02 | 1,049.98 | 1,060.54 | 1,399.92 | 1,366.53 | 1,286.74 | 1,318.63 | 2.19% | **1,289.78** | Page 10 |
| Full package[2] | 1,164.05 | 1,138.04 | 1,149.06 | 1,497.10 | 1,467.19 | 1,382.89 | 1,416.61 | 2.17% | **1,385.84** | Page 11 |

Notes:

[1] BI + PD + AB + UM + Col. + Comp. + SP + AP with BI earned vehicles as the base

[2] BI + PD + AB + UM + Col. + Comp.

Selected Ultimate Loss Cost: Alberta
Using Data as of December 31, 2018
Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

**1 Bodily Injury (per earned vehicles)**

| **Accident Year** | **2016** | **2017** | **2018** |
|---|---|---|---|
| Trend Factor | 1.5926 | 1.4746 | 1.3654 |
| ULAE Factor | 0.0925 | 0.0925 | 0.0925 |

| **Accident Year** | **2016** | **2017** | **2018** | **Total** |
|---|---|---|---|---|
| GISA Number of Earned Vehicles | 2,678,904 | 2,690,011 | 2,743,660 | 8,112,575 |
| GISA Ultimate Loss Cost (excld. ULAE) | 375.24 | 380.78 | 374.91 | 376.96 |
| GISA ULAE per Earned Vehicles | 31.69 | 34.92 | 37.83 | 34.84 |
| GISA Health Levy per Earned Vehicles | 37.42 | 37.42 | 43.90 | 39.61 |
| GISA Ultimate Loss Cost (incld. ULAE & Health Levy) | 444.35 | 453.12 | 456.64 | 451.41 |
| GISA Average Earned Premium | 606.35 | 647.10 | 689.44 | 647.96 |
| GISA Ultimate Loss Ratio | 73% | 70% | 66% | 70% |

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| **Using Accident Year 20xx Data** | **2016** | **2017** | **2018** | **Weighted Average** |
|---|---|---|---|---|
| Ultimate Loss Cost (excld. ULAE & Health Levy) | 597.60 | 561.50 | 511.90 | 531.74 |
| ULAE per Earned Vehicle | 55.28 | 51.94 | 47.35 | 49.19 |
| Health Levy per Earned Vehicle | 59.59 | 55.18 | 59.94 | 58.04 |
| Ultimate Loss Cost (incld. ULAE & Health Levy) | 712.47 | 668.62 | 619.19 | **638.96** |

| | | |
|---|---|---|
| Selected Ultimate Loss Cost | **638.96** | (Incld. ULAE & Health Levy) |
| COVID-19 adjustment | 2.50% | |
| Adjusted Selected Ultimate Loss Cost | **622.99** | (Incld. ULAE & Health Levy) |

Note:
Weighted average: 0% x 2016 + 40% x 2017 + 60% x 2018

**2 Property Damage (per earned vehicles)**

| **Accident Year** | **2016** | **2017** | **2018** |
|---|---|---|---|
| Trend Factor | 1.1016 | 1.0853 | 1.0693 |
| ULAE Factor | 0.0925 | 0.0925 | 0.0925 |

| **Accident Year** | **2016** | **2017** | **2018** | **Total** |
|---|---|---|---|---|
| GISA Number of Earned Vehicles | 2,678,904 | 2,690,011 | 2,743,660 | 8,112,575 |
| GISA Ultimate Loss Cost (excld. ULAE) | 145.81 | 158.38 | 159.86 | 154.73 |
| GISA ULAE per Earned Vehicles | 12.38 | 14.49 | 16.10 | 14.34 |
| GISA Ultimate Loss Cost (incld. ULAE) | 158.19 | 172.88 | 175.95 | 169.07 |
| GISA Average Earned Premium | 606.35 | 647.10 | 689.44 | 647.96 |
| GISA Ultimate Loss Ratio | 26% | 27% | 26% | 26% |

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| **Using Accident Year 20xx Data** | **2016** | **2017** | **2018** | **Weighted Average** |
|---|---|---|---|---|
| Ultimate Loss Cost (excld. ULAE) | 160.62 | 171.90 | 170.93 | 171.32 |
| ULAE per Earned Vehicle | 14.86 | 15.90 | 15.81 | 15.85 |
| Ultimate Loss Cost (incld. ULAE) | 175.48 | 187.80 | 186.74 | **187.17** |

| | | |
|---|---|---|
| Selected Ultimate Loss Cost | **187.17** | (Incld. ULAE) |
| COVID-19 adjustment | 2.50% | |
| Adjusted Selected Ultimate Loss Cost | **182.49** | (Incld. ULAE) |

Note:
Weighted average: 0% x 2016 + 40% x 2017 + 60% x 2018

**3 Accident Benefit (per earned vehicles)**

| **Accident Year** | **2016** | **2017** | **2018** |
|---|---|---|---|
| Trend Factor | 1.6994 | 1.5663 | 1.4436 |
| ULAE Factor | 0.0925 | 0.0925 | 0.0925 |

| **Accident Year** | **2016** | **2017** | **2018** | **Total** |
|---|---|---|---|---|
| GISA Number of Earned Vehicles | 2,677,526 | 2,692,207 | 2,746,098 | 8,115,831 |
| GISA Ultimate Loss Cost (excld. ULAE) | 47.74 | 55.06 | 59.26 | 54.07 |
| GISA ULAE per Earned Vehicles | 4.04 | 5.03 | 5.95 | 5.02 |
| GISA Ultimate Loss Cost (incld. ULAE) | 51.78 | 60.10 | 65.21 | 59.08 |
| GISA Average Earned Premium | 56.99 | 57.50 | 59.64 | 58.06 |
| GISA Ultimate Loss Ratio | 91% | 105% | 109% | 102% |

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| **Using Accident Year 20xx Data** | **2016** | **2017** | **2018** | **Weighted Average** |
|---|---|---|---|---|
| Ultimate Loss Cost (excld. ULAE) | 81.13 | 86.24 | 85.54 | 85.82 |
| ULAE per Earned Vehicle | 7.50 | 7.98 | 7.91 | 7.94 |
| Ultimate Loss Cost (incld. ULAE) | 88.63 | 94.22 | 93.45 | **93.76** |

| | | |
|---|---|---|
| Selected Ultimate Loss Cost | **93.76** | (Incld. ULAE) |
| COVID-19 adjustment | 2.50% | |
| Adjusted Selected Ultimate Loss Cost | **91.42** | (Incld. ULAE) |

Note:
Weighted average: 0% x 2016 + 40% x 2017 + 60% x 2018

**4 Underinsured Motorists (per earned vehicles)**

| **Accident Year** | **2016** | **2017** | **2018** |
|---|---|---|---|
| Trend Factor | 1.2904 | 1.2407 | 1.1930 |
| ULAE Factor | 0.0925 | 0.0925 | 0.0925 |

| **Accident Year** | **2016** | **2017** | **2018** | **Total** |
|---|---|---|---|---|
| GISA Number of Earned Vehicles | 2,638,363 | 2,647,884 | 2,694,762 | 7,981,009 |
| GISA Ultimate Loss Cost (excld. ULAE) | 6.03 | 5.03 | 4.09 | 5.05 |
| GISA ULAE per Earned Vehicles | 0.51 | 0.46 | 0.41 | 0.46 |
| GISA Ultimate Loss Cost (incld. ULAE) | 6.55 | 5.49 | 4.51 | 5.51 |
| GISA Average Earned Premium | 28.51 | 29.23 | 29.71 | 29.16 |
| GISA Ultimate Loss Ratio | 23% | 19% | 15% | 19% |

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| **Using Accident Year 20xx Data** | **2016** | **2017** | **2018** | **Weighted Average** |
|---|---|---|---|---|
| Ultimate Loss Cost (excld. ULAE) | 7.79 | 6.24 | 4.88 | 5.43 |
| ULAE per Earned Vehicle | 0.72 | 0.58 | 0.45 | 0.50 |
| Ultimate Loss Cost (incld. ULAE) | 8.51 | 6.82 | 5.33 | **5.93** |

| | | |
|---|---|---|
| Selected Ultimate Loss Cost | **5.93** | (Incld. ULAE) |
| COVID-19 adjustment | 2.50% | |
| Adjusted Selected Ultimate Loss Cost | **5.78** | (Incld. ULAE) |

Note:
Weighted average: 0% x 2016 + 40% x 2017 + 60% x 2018

**5 Collision (per earned vehicles)**

| **Accident Year** | **2016** | **2017** | **2018** |
|---|---|---|---|
| Trend Factor | 1.1741 | 1.1455 | 1.1175 |
| ULAE Factor | 0.0925 | 0.0925 | 0.0925 |

| **Accident Year** | **2016** | **2017** | **2018** | **Total** |
|---|---|---|---|---|
| GISA Number of Earned Vehicles | 1,980,822 | 1,987,893 | 2,026,609 | 5,995,324 |
| GISA Ultimate Loss Cost (excld. ULAE) | 228.74 | 249.56 | 246.32 | 241.59 |
| GISA ULAE per Earned Vehicles | 19.40 | 22.84 | 24.80 | 22.37 |
| GISA Ultimate Loss Cost (incld. ULAE) | 248.14 | 272.40 | 271.12 | 263.95 |
| GISA Average Earned Premium | 401.72 | 392.61 | 391.95 | 395.40 |
| GISA Ultimate Loss Ratio | 62% | 69% | 69% | 67% |

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| **Using Accident Year 20xx Data** | **2016** | **2017** | **2018** | **Weighted Average** |
|---|---|---|---|---|
| Ultimate Loss Cost (excld. ULAE) | 268.56 | 285.86 | 275.27 | 279.51 |
| ULAE per Earned Vehicle | 24.84 | 26.44 | 25.46 | 25.85 |
| Ultimate Loss Cost (incld. ULAE) | 293.40 | 312.31 | 300.73 | **305.36** |

| | | |
|---|---|---|
| Selected Ultimate Loss Cost | **305.36** | (Incld. ULAE) |
| COVID-19 adjustment | 2.50% | |
| Adjusted Selected Ultimate Loss Cost | **297.73** | (Incld. ULAE) |

Note:
Weighted average: 0% x 2016 + 40% x 2017 + 60% x 2018

**6 Comprehensive (per earned vehicles)**

| **Accident Year** | **2016** | **2017** | **2018** |
|---|---|---|---|
| Trend Factor | 1.5058 | 1.4139 | 1.3276 |
| ULAE Factor | 0.0925 | 0.0925 | 0.0925 |

| **Accident Year** | **2016** | **2017** | **2018** | **Total** |
|---|---|---|---|---|
| GISA Number of Earned Vehicles | 2,364,734 | 2,365,937 | 2,400,763 | 7,131,434 |
| GISA Ultimate Loss Cost (excld. ULAE & CAT) | 132.89 | 127.80 | 122.33 | 127.65 |
| GISA Catastrophic Losses per Earned Vehicles | 102.22 | 31.66 | 37.23 | 56.93 |
| GISA ULAE per Earned Vehicles | 19.95 | 14.59 | 16.07 | 16.86 |
| GISA Ultimate Loss Cost (incld. ULAE & CAT) | 255.06 | 174.06 | 175.63 | 201.44 |
| GISA Average Earned Premium | 220.41 | 226.22 | 238.95 | 228.58 |
| GISA Ultimate Loss Ratio | 116% | 77% | 74% | 88% |

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| **Using Accident Year 20xx Data** | **2016** | **2017** | **2018** | **Weighted Average** |
|---|---|---|---|---|
| Ultimate Loss Cost (excld. ULAE & CAT) | 200.10 | 180.70 | 162.41 | 169.73 |
| ULAE per Earned Vehicle | 18.51 | 16.72 | 15.02 | 15.70 |
| Ultimate Loss Cost (incld. ULAE & excld. CAT) | 218.61 | 197.42 | 177.43 | **185.43** |

| | | |
|---|---|---|
| Selected Ultimate Loss Cost | **185.43** | (Incld. ULAE; excld. CAT) |
| COVID-19 adjustment | 0.00% | |
| Adjusted Selected Ultimate Loss Cost | **185.43** | (Incld. ULAE; excld. CAT) |

Note:
Weighted average: 0% x 2016 + 40% x 2017 + 60% x 2018

**7 Specified Perils (per earned vehicles)**

| **Accident Year** | **2016** | **2017** | **2018** |
|---|---|---|---|
| Trend Factor | 1.5524 | 1.4508 | 1.3559 |
| ULAE Factor | 0.0925 | 0.0925 | 0.0925 |

| **Accident Year** | **2016** | **2017** | **2018** | **Total** |
|---|---|---|---|---|
| GISA Number of Earned Vehicles | 17,835 | 19,132 | 21,514 | 58,481 |
| GISA Ultimate Loss Cost (excld. ULAE & CAT) | 45.77 | 44.67 | 45.82 | 45.43 |
| GISA Catastrophic Losses per Earned Vehicles | 13.98 | 10.27 | 6.77 | 10.11 |
| GISA ULAE per Earned Vehicles | 5.07 | 5.03 | 5.30 | 5.14 |
| GISA Ultimate Loss Cost (incld. ULAE & CAT) | 64.83 | 59.97 | 57.89 | 60.69 |
| GISA Average Earned Premium | 103.09 | 102.86 | 98.96 | 101.50 |
| GISA Ultimate Loss Ratio | 63% | 58% | 58% | 60% |

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| **Using Accident Year 20xx Data** | **2016** | **2017** | **2018** | **Weighted Average** |
|---|---|---|---|---|
| Ultimate Loss Cost (excld. ULAE & CAT) | 71.06 | 64.81 | 62.13 | 63.20 |
| ULAE per Earned Vehicle | 6.57 | 5.99 | 5.75 | 5.85 |
| Ultimate Loss Cost (incld. ULAE & excld. CAT) | 77.63 | 70.80 | 67.88 | **69.05** |

| | | |
|---|---|---|
| Selected Ultimate Loss Cost | **69.05** | (Incld. ULAE; excld. CAT) |
| COVID-19 adjustment | 0.00% | |
| Adjusted Selected Ultimate Loss Cost | **69.05** | (Incld. ULAE; excld. CAT) |

Note:
Weighted average: 0% x 2016 + 40% x 2017 + 60% x 2018

**8 All Perils (per earned vehicles)**

| **Accident Year** | **2016** | **2017** | **2018** |
|---|---|---|---|
| Trend Factor | 1.2904 | 1.2407 | 1.1930 |
| ULAE Factor | 0.0925 | 0.0925 | 0.0925 |

| **Accident Year** | **2016** | **2017** | **2018** | **Total** |
|---|---|---|---|---|
| GISA Number of Earned Vehicles | 22,676 | 21,298 | 21,009 | 64,983 |
| GISA Ultimate Loss Cost (excld. ULAE & CAT) | 382.58 | 388.26 | 410.58 | 393.49 |
| GISA Catastrophic Losses per Earned Vehicles | 78.20 | 29.98 | 46.65 | 52.20 |
| GISA ULAE per Earned Vehicles | 39.11 | 38.27 | 46.04 | 41.08 |
| GISA Ultimate Loss Cost (incld. ULAE & CAT) | 499.89 | 456.51 | 503.27 | 486.77 |
| GISA Average Earned Premium | 671.80 | 694.27 | 725.82 | 696.63 |
| GISA Ultimate Loss Ratio | 74% | 66% | 69% | 70% |

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| **Using Accident Year 20xx Data** | **2016** | **2017** | **2018** | **Weighted Average** |
|---|---|---|---|---|
| Ultimate Loss Cost (excld. ULAE & CAT) | 493.68 | 481.73 | 489.83 | 486.59 |
| ULAE per Earned Vehicle | 45.67 | 44.56 | 45.31 | 45.01 |
| Ultimate Loss Cost (incld. ULAE & excld. CAT) | 539.34 | 526.29 | 535.14 | **531.60** |

| | | |
|---|---|---|
| Selected Ultimate Loss Cost | **531.60** | (Incld. ULAE; excld. CAT) |
| COVID-19 adjustment | 1.67% | |
| Adjusted Selected Ultimate Loss Cost | **522.74** | (Incld. ULAE; excld. CAT) |

Note:
Weighted average: 0% x 2016 + 40% x 2017 + 60% x 2018

**9 Grand Total (per earned vehicles)[1]**

| | |
|---|---|
| Trend Factor | Refer to individual coverage appendices |
| ULAE Factor | Refer to individual coverage appendices |

| **Accident Year** | **2016** | **2017** | **2018** | **Total** |
|---|---|---|---|---|
| GISA Number of Earned Vehicles | 2,678,904 | 2,690,011 | 2,743,660 | 8,112,575 |
| GISA Ultimate Loss Cost (incld. ULAE, CAT & Health Levy) | 1,074.02 | 1,049.98 | 1,060.54 | 1,061.49 |
| GISA Average Earned Premium | 1,189.36 | 1,228.74 | 1,283.25 | 1,234.17 |
| GISA Ultimate Loss Ratio | 90% | 85% | 83% | 86% |

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| **Using Accident Year 20xx Data** | **2016** | **2017** | **2018** | **Weighted by each coverage** |
|---|---|---|---|---|
| Ultimate Loss Cost (excld. ULAE, CAT & Health Levy) | 1,226.84 | 1,200.32 | 1,122.92 | 1,153.86 |
| ULAE per Earned Vehicle | 113.48 | 111.03 | 103.87 | 106.74 |
| Health Levy per Earned Vehicle | 59.59 | 55.18 | 59.94 | 58.04 |
| Ultimate Loss Cost (incld. ULAE & Health Levy but excld. CAT) | 1,399.92 | 1,366.53 | 1,286.74 | **1,318.63** |

| | | |
|---|---|---|
| Selected Ultimate Loss Cost | **1,318.63** | (Incld. ULAE & Health Levy; excld. CAT) |
| COVID-19 adjustment | 2.19% | |
| Adjusted Selected Ultimate Loss Cost | **1,289.78** | (Incld. ULAE & Health Levy; excld. CAT) |

Note:

[1] BI + PD + AB + UM + Col. + Comp. + SP + AP with BI earned vehicles as the base

**10 Full Package[2]**
**(per earned vehicles)**

| **Accident Year** | **2016** | **2017** | **2018** | **Total** |
|---|---|---|---|---|
| GISA Ultimate Loss Cost (excld. ULAE) | 936.44 | 976.62 | 966.77 | 960.04 |
| GISA ULAE per Earned Vehicles | 87.97 | 92.33 | 101.16 | 93.88 |
| GISA Ultimate Loss Cost (incld. ULAE, CAT & Health Levy) | 1,164.05 | 1,138.04 | 1,149.06 | 1,150.47 |
| GISA Average Earned Premium | 1,920.32 | 1,999.75 | 2,099.13 | 2,007.11 |
| Ultimate Loss Ratio | 61% | 57% | 55% | 57% |

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| | **Sum of each coverage[2]** | | | **Weighted** |
|---|---|---|---|---|
| **Using Accident Year 20xx Data** | **2016** | **2017** | **2018** | **Average** |
| Ultimate Loss Cost (excld. ULAE, CAT & Health Levy) | 1,315.80 | 1,292.45 | 1,210.94 | 1,243.55 |
| ULAE per Earned Vehicle | 121.71 | 119.55 | 112.01 | 115.03 |
| Health Levy per Earned Vehicle | 59.59 | 55.18 | 59.94 | 58.04 |
| Ultimate Loss Cost (incld. ULAE & Health Levy but excld. CAT) | 1,497.10 | 1,467.19 | 1,382.89 | **1,416.61** |

| | | |
|---|---|---|
| Selected Ultimate Loss Cost | **1,416.61** | (Incld. ULAE & Health Levy; excld. CAT) |
| COVID-19 adjustment | 2.17% | |
| Adjusted Selected Ultimate Loss Cost | **1,385.84** | (Incld. ULAE & Health Levy; excld. CAT) |

Note:
[2] BI + PD + AB + UM + Col. + Comp.

# APPENDIX 5.4

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2016-2018 Ultimate Loss Cost (including ULAE, Health Levy and CAT Loading)

Trended Ultimate Loss And Loss Adjustment Expense & Ultimate Loss Cost | Location: Alberta | Appendix 5.4-1

Using Data as of December 31, 2018

Bodily Injury

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| Accident Year | Loss Trend Factors | Average Accident Date (Trend From) | Trend Period | Past Loss Trend | Future Loss Trend | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Prior to Apr 1, 2019 | April 1, 2019 to Jan 1, 2020 | Jan 1, 2020 to Jan 1, 2021 | Jan 1, 2021 to Jan 1, 2022 | Jan 1, 2022 to Jan 1, 2023 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 2016 | 1.5926 | 1 Jul, 2016 | 6.5 | 8.00% | 7.00% | 7.00% | 7.00% | 7.00% |
| 2017 | 1.4746 | 1 Jul, 2017 | 5.5 | 8.00% | 7.00% | 7.00% | 7.00% | 7.00% |
| 2018 | 1.3654 | 1 Jul, 2018 | 4.5 | 8.00% | 7.00% | 7.00% | 7.00% | 7.00% |

(1) Based on Col 4 to Col 7.
(4) & (5) These factors are from March 27, 2020 Bulletin: 01-2020 Automobile Insurance Rate Board.
(6) to (8) Same as Col 5

| Accident Year | Ultimate Number of Claims | Car Years Earned | *($000's)* Premium Earned | *($000's)* Inc Loss + ALAE | *($000's)* Proj Ult excld ULAE | excld ULAE Ult Loss Cost | excld ULAE % Ult Loss Ratio | Health Levy % of Earned TPL Premium | Health Levy Half-year ($000's) | Health Levy Full-year per earned vehicles |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (24) | (25) | (26) |
| 20161 | 7,697 | 1,324,359 | 789,217 | 335,497 | 456,947 | 345.03 | 57.90% | 6.31% | 49,800 | |
| 20162 | 8,925 | 1,354,545 | 835,123 | 385,835 | 548,272 | 404.76 | 65.65% | 6.04% | 50,441 | 37.42 |
| 20171 | 8,367 | 1,322,493 | 841,554 | 302,938 | 484,701 | 366.51 | 57.60% | 5.84% | 49,147 | |
| 20172 | 8,592 | 1,367,518 | 899,157 | 306,586 | 539,591 | 394.58 | 60.01% | 5.73% | 51,522 | 37.42 |
| 20181 | 8,167 | 1,346,485 | 911,176 | 242,062 | 491,386 | 364.94 | 53.93% | 6.01% | 54,762 | |
| 20182 | 8,260 | 1,397,175 | 980,422 | 199,716 | 537,237 | 384.52 | 54.80% | 6.70% | 65,688 | 43.90 |
| **Total** | **50,008** | **8,112,575** | **5,256,649** | **1,772,634** | **3,058,133** | **376.96** | **58.18%** | | **321,359** | **39.61** |

| Accident Year | Ultimate Number of Claims | Car Years Earned | *($000's)* Premium Earned | *($000's)* Inc Loss + ALAE | *($000's)* Proj Ult excld ULAE | excld ULAE Ult Loss Cost | excld ULAE % Ult Loss Ratio | GISA ULAE per earned vehicles | GISA ULAE Factor |
|---|---|---|---|---|---|---|---|---|---|
| | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
| 2016 | 16,622 | 2,678,904 | 1,624,340 | 721,333 | 1,005,219 | 375.24 | 61.88% | 31.69 | 8.45% |
| 2017 | 16,959 | 2,690,011 | 1,740,711 | 609,524 | 1,024,291 | 380.78 | 58.84% | 34.92 | 9.17% |
| 2018 | 16,427 | 2,743,660 | 1,891,598 | 441,778 | 1,028,623 | 374.91 | 54.38% | 37.83 | 10.09% |
| **Total** | **50,008** | **8,112,575** | **5,256,649** | **1,772,634** | **3,058,133** | **376.96** | **58.18%** | **74.45** | |

| Data from Accident Year | Trended per earned vehicles: ULAE | ULAE factor | Ult Loss Cost excld. ULAE | ULAE per earned vehicle | Ult Loss Cost incld. ULAE | Health Levy | Ult Loss Cost incld. ULAE & Health Levy |
|---|---|---|---|---|---|---|---|
| | (17) | (18) | (19) | (20) | (21) | (22) | (23) |
| 2016 | 50.47 | 8.45% | 597.60 | 55.28 | 652.87 | 59.59 | 712.47 |
| 2017 | 51.50 | 9.17% | 561.50 | 51.94 | 613.44 | 55.18 | 668.62 |
| 2018 | 51.65 | 10.09% | 511.90 | 47.35 | 559.25 | 59.94 | 619.19 |
| Average ULAE Factor | | 9.24% | | | | | |
| Selected ULAE Factor | | 9.25% | | | | | |

(1) to (14) 2018-2 Incurred Loss Development Factor PPA excld. Farmers AB (Revised) Report (Bulletin No: 2019-15)
(15) Ultimate Loss Cost From 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16) less Col 13 less Col 26
(16) Col 15 / Col 13
(17) Col 15 x Col 1 [Loss Trend Factors]
(18) Col 17 / Col 19
(19) Col 13 x Col 1 [Loss Trend Factors]
(20) Col 19 x Selected ULAE Factor
(21) Col 19 + Col 20
(22) Col 26 x Col 1 [Loss Trend Factors]
(23) Col 21 + Col 22
(24) 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16)
(25) Col 24 x Col 3

Trended Ultimate Loss And Loss Adjustment Expense & Ultimate Loss Cost — Location: Alberta — Appendix 5.4-2

Using Data as of December 31, 2018

Property Damage

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| Accident Year | Loss Trend Factors | Average Accident Date (Trend From) | Trend Period | Past Loss Trend | Future Loss Trend | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Prior to Apr 1, 2019 | April 1, 2019 to Jan 1, 2020 | Jan 1, 2020 to Jan 1, 2021 | Jan 1, 2021 to Jan 1, 2022 | Jan 1, 2022 to Jan 1, 2023 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 2016 | 1.1016 | 1 Jul, 2016 | 6.5 | 1.50% | 1.50% | 1.50% | 1.50% | 1.50% |
| 2017 | 1.0853 | 1 Jul, 2017 | 5.5 | 1.50% | 1.50% | 1.50% | 1.50% | 1.50% |
| 2018 | 1.0693 | 1 Jul, 2018 | 4.5 | 1.50% | 1.50% | 1.50% | 1.50% | 1.50% |

(1) Based on Col 4 to Col 7.
(4) & (5) These factors are from March 27, 2020 Bulletin: 01-2020 Automobile Insurance Rate Board.
(6) to (8) Same as Col 5

| Accident Year | Ultimate Number of Claims | Car Years Earned | *($000's)* Premium Earned | *($000's)* Inc Loss + ALAE | *($000's)* Proj Ult excld ULAE | excld ULAE Ult Loss Cost | excld ULAE % Ult Loss Ratio |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 20161 | 37,652 | 1,324,359 | 789,217 | 180,218 | 180,038 | 135.94 | 22.81% |
| 20162 | 41,288 | 1,354,545 | 835,123 | 210,569 | 210,569 | 155.45 | 25.21% |
| 20171 | 40,810 | 1,322,493 | 841,554 | 204,970 | 205,585 | 155.45 | 24.43% |
| 20172 | 41,750 | 1,367,518 | 899,157 | 217,000 | 220,472 | 161.22 | 24.52% |
| 20181 | 43,233 | 1,346,485 | 911,176 | 211,778 | 223,849 | 166.25 | 24.57% |
| 20182 | 39,198 | 1,397,175 | 980,422 | 162,070 | 214,742 | 153.70 | 21.90% |
| **Total** | **243,931** | **8,112,575** | **5,256,649** | **1,186,605** | **1,255,256** | **154.73** | **23.88%** |

| Accident Year | Ultimate Number of Claims | Car Years Earned | *($000's)* Premium Earned | *($000's)* Inc Loss + ALAE | *($000's)* Proj Ult excld ULAE | excld ULAE Ult Loss Cost | excld ULAE % Ult Loss Ratio | GISA ULAE per earned vehicles | GISA ULAE Factor |
|---|---|---|---|---|---|---|---|---|---|
| | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
| 2016 | 78,940 | 2,678,904 | 1,624,340 | 390,788 | 390,607 | 145.81 | 24.05% | 12.38 | 8.49% |
| 2017 | 82,560 | 2,690,011 | 1,740,711 | 421,970 | 426,057 | 158.38 | 24.48% | 14.49 | 9.15% |
| 2018 | 82,431 | 2,743,660 | 1,891,598 | 373,848 | 438,592 | 159.86 | 23.19% | 16.10 | 10.07% |
| **Total** | **243,931** | **8,112,575** | **5,256,649** | **1,186,605** | **1,255,256** | **154.73** | **23.88%** | **14.34** | |

| Data from Accident Year | Trended per earned vehicles: ULAE | ULAE factor | Ult Loss Cost excld. ULAE | ULAE per earned vehicle | Ult Loss Cost incld. ULAE |
|---|---|---|---|---|---|
| | (17) | (18) | (19) | (20) | (21) |
| 2016 | 13.64 | 8.49% | 160.62 | 14.86 | 175.48 |
| 2017 | 15.73 | 9.15% | 171.90 | 15.90 | 187.80 |
| 2018 | 17.21 | 10.07% | 170.93 | 15.81 | 186.74 |
| Average ULAE Factor | | 9.24% | | | |
| Selected ULAE Factor | | 9.25% | | | |

(1) to (14) 2018-2 Incurred Loss Development Factor PPA excld. Farmers AB (Revised) Report (Bulletin No: 2019-15)
(15) Ultimate Loss Cost From 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16) less Col 13
(16) Col 15 / Col 13
(17) Col 15 x Col 1 [Loss Trend Factors]
(18) Col 17 / Col 19
(19) Col 13 x Col 1 [Loss Trend Factors]
(20) Col 19 x Selected ULAE Factor
(21) Col 19 + Col 20

Trended Ultimate Loss And Loss Adjustment Expense & Ultimate Loss Cost | Location: Alberta | Appendix 5.4-3

Using Data as of December 31, 2018

Total - Accident Benefits

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| Accident Year | Loss Trend Factors | Average Accident Date (Trend From) | Trend Period | Past Loss Trend | Future Loss Trend | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Prior to Apr 1, 2019 | April 1, 2019 to Jan 1, 2020 | Jan 1, 2020 to Jan 1, 2021 | Jan 1, 2021 to Jan 1, 2022 | Jan 1, 2022 to Jan 1, 2023 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 2016 | 1.6994 | 1 Jul, 2016 | 6.5 | 8.50% | 8.50% | 8.50% | 8.50% | 8.50% |
| 2017 | 1.5663 | 1 Jul, 2017 | 5.5 | 8.50% | 8.50% | 8.50% | 8.50% | 8.50% |
| 2018 | 1.4436 | 1 Jul, 2018 | 4.5 | 8.50% | 8.50% | 8.50% | 8.50% | 8.50% |

(1) Based on Col 4 to Col 7.
(4) & (5) These factors are from March 27, 2020 Bulletin: 01-2020 Automobile Insurance Rate Board.
(6) to (8) Same as Col 5

| Accident Year | Ultimate Number of Claims | Car Years Earned | *($000's)* Premium Earned | *($000's)* Inc Loss + ALAE | *($000's)* Proj Ult excld ULAE | excld ULAE Ult Loss Cost | excld ULAE % Ult Loss Ratio |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 20161 | 13,583 | 1,322,867 | 75,493 | 54,208 | 55,040 | 41.61 | 72.91% |
| 20162 | 16,059 | 1,354,659 | 77,094 | 71,617 | 72,786 | 53.73 | 94.41% |
| 20171 | 14,951 | 1,323,430 | 75,533 | 70,536 | 69,791 | 52.73 | 92.40% |
| 20172 | 16,164 | 1,368,777 | 79,257 | 75,596 | 78,452 | 57.32 | 98.98% |
| 20181 | 15,686 | 1,347,865 | 79,454 | 77,239 | 83,271 | 61.78 | 104.80% |
| 20182 | 15,389 | 1,398,233 | 84,335 | 80,885 | 79,457 | 56.83 | 94.22% |
| **Total** | **91,832** | **8,115,831** | **471,165** | **430,080** | **438,796** | **54.07** | **93.13%** |

| Accident Year | Ultimate Number of Claims | Car Years Earned | *($000's)* Premium Earned | *($000's)* Inc Loss + ALAE | *($000's)* Proj Ult excld ULAE | excld ULAE Ult Loss Cost | excld ULAE % Ult Loss Ratio | GISA ULAE per earned vehicles | GISA ULAE Factor |
|---|---|---|---|---|---|---|---|---|---|
| | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
| 2016 | 29,642 | 2,677,526 | 152,587 | 125,824 | 127,826 | 47.74 | 83.77% | 4.04 | 8.45% |
| 2017 | 31,115 | 2,692,207 | 154,789 | 146,132 | 148,242 | 55.06 | 95.77% | 5.03 | 9.14% |
| 2018 | 31,075 | 2,746,098 | 163,789 | 158,124 | 162,728 | 59.26 | 99.35% | 5.95 | 10.05% |
| **Total** | **91,832** | **8,115,831** | **471,165** | **430,080** | **438,796** | **54.07** | **93.13%** | **5.02** | |

| Data from Accident Year | Trended per earned vehicles ULAE | ULAE factor | Ult Loss Cost excld. ULAE | ULAE per earned vehicle | Ult Loss Cost incld. ULAE |
|---|---|---|---|---|---|
| | (17) | (18) | (19) | (20) | (21) |
| 2016 | 6.86 | 8.45% | 81.13 | 7.50 | 88.63 |
| 2017 | 7.88 | 9.14% | 86.24 | 7.98 | 94.22 |
| 2018 | 8.59 | 10.05% | 85.54 | 7.91 | 93.45 |
| Average ULAE Factor | | 9.21% | | | |
| Selected ULAE Factor | | 9.25% | | | |

(1) to (14) 2018-2 Incurred Loss Development Factor PPA excld. Farmers AB (Revised) Report (Bulletin No: 2019-15)
(15) Ultimate Loss Cost From 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16) less Col 13
(16) Col 15 / Col 13
(17) Col 15 x Col 1 [Loss Trend Factors]
(18) Col 17 / Col 19
(19) Col 13 x Col 1 [Loss Trend Factors]
(20) Col 19 x Selected ULAE Factor
(21) Col 19 + Col 20

Trended Ultimate Loss And Loss Adjustment Expense & Ultimate Loss Cost | Location: Alberta | Appendix 5.4-4

Using Data as of December 31, 2018

Underinsured Motorists

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| Accident Year | Loss Trend Factors | Average Accident Date (Trend From) | Trend Period | Past Loss Trend | Future Loss Trend | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Prior to Apr 1, 2019 | April 1, 2019 to Jan 1, 2020 | Jan 1, 2020 to Jan 1, 2021 | Jan 1, 2021 to Jan 1, 2022 | Jan 1, 2022 to Jan 1, 2023 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 2016 | 1.2904 | 1 Jul, 2016 | 6.5 | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% |
| 2017 | 1.2407 | 1 Jul, 2017 | 5.5 | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% |
| 2018 | 1.1930 | 1 Jul, 2018 | 4.5 | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% |

(1) Based on Col 4 to Col 7.
(4) & (5) These factors are from March 27, 2020 Bulletin: 01-2020 Automobile Insurance Rate Board.
(6) to (8) Same as Col 5

| Accident Year | Ultimate Number of Claims | Car Years Earned | *($000's)* Premium Earned | *($000's)* Inc Loss + ALAE | *($000's)* Proj Ult excld ULAE | excld ULAE Ult Loss Cost | excld ULAE % Ult Loss Ratio |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 20161 | 17 | 1,304,089 | 36,894 | 6,973 | 7,970 | 6.11 | 21.60% |
| 20162 | 27 | 1,334,274 | 38,337 | 5,950 | 7,950 | 5.96 | 20.74% |
| 20171 | 18 | 1,302,839 | 37,868 | 1,845 | 3,108 | 2.39 | 8.21% |
| 20172 | 36 | 1,345,045 | 39,533 | 4,983 | 10,211 | 7.59 | 25.83% |
| 20181 | 32 | 1,324,079 | 39,209 | 2,639 | 7,189 | 5.43 | 18.34% |
| 20182 | 20 | 1,370,683 | 40,848 | 511 | 3,840 | 2.80 | 9.40% |
| **Total** | **150** | **7,981,009** | **232,689** | **22,902** | **40,269** | **5.05** | **17.31%** |

| Accident Year | Ultimate Number of Claims | Car Years Earned | *($000's)* Premium Earned | *($000's)* Inc Loss + ALAE | *($000's)* Proj Ult excld ULAE | excld ULAE Ult Loss Cost | excld ULAE % Ult Loss Ratio | GISA ULAE per earned vehicles | GISA ULAE Factor |
|---|---|---|---|---|---|---|---|---|---|
| | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
| 2016 | 44 | 2,638,363 | 75,231 | 12,924 | 15,920 | 6.03 | 21.16% | 0.51 | 8.49% |
| 2017 | 54 | 2,647,884 | 77,401 | 6,828 | 13,319 | 5.03 | 17.21% | 0.46 | 9.15% |
| 2018 | 52 | 2,694,762 | 80,057 | 3,150 | 11,029 | 4.09 | 13.78% | 0.41 | 10.07% |
| **Total** | **150** | **7,981,009** | **232,689** | **22,902** | **40,269** | **5.05** | **17.31%** | **0.46** | |

| Data from Accident Year | Trended per earned vehicles: ULAE | ULAE factor | Ult Loss Cost excld. ULAE | ULAE per earned vehicle | Ult Loss Cost incld. ULAE |
|---|---|---|---|---|---|
| | (17) | (18) | (19) | (20) | (21) |
| 2016 | 0.66 | 8.49% | 7.79 | 0.72 | 8.51 |
| 2017 | 0.57 | 9.15% | 6.24 | 0.58 | 6.82 |
| 2018 | 0.49 | 10.07% | 4.88 | 0.45 | 5.33 |
| Average ULAE Factor | | 9.24% | | | |
| Selected ULAE Factor | | 9.25% | | | |

(1) to (14) 2018-2 Incurred Loss Development Factor PPA excld. Farmers AB (Revised) Report (Bulletin No: 2019-15)
(15) Ultimate Loss Cost From 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16) less Col 13
(16) Col 15 / Col 13
(17) Col 15 x Col 1 [Loss Trend Factors]
(18) Col 17 / Col 19
(19) Col 13 x Col 1 [Loss Trend Factors]
(20) Col 19 x Selected ULAE Factor
(21) Col 19 + Col 20

Trended Ultimate Loss And Loss Adjustment Expense & Ultimate Loss Cost | Location: Alberta | Appendix 5.4-5

Using Data as of December 31, 2018

Collision

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| Accident Year | Loss Trend Factors | Average Accident Date (Trend From) | Trend Period | Past Loss Trend | Future Loss Trend | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Prior to Apr 1, 2019 | April 1, 2019 to Jan 1, 2020 | Jan 1, 2020 to Jan 1, 2021 | Jan 1, 2021 to Jan 1, 2022 | Jan 1, 2022 to Jan 1, 2023 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 2016 | 1.1741 | 1 Jul, 2016 | 6.5 | 2.50% | 2.50% | 2.50% | 2.50% | 2.50% |
| 2017 | 1.1455 | 1 Jul, 2017 | 5.5 | 2.50% | 2.50% | 2.50% | 2.50% | 2.50% |
| 2018 | 1.1175 | 1 Jul, 2018 | 4.5 | 2.50% | 2.50% | 2.50% | 2.50% | 2.50% |

(1) Based on Col 4 to Col 7.
(4) & (5) These factors are from March 27, 2020 Bulletin: 01-2020 Automobile Insurance Rate Board.
(6) to (8) Same as Col 5

| Accident Year | Ultimate Number of Claims | Car Years Earned | ($000's) Premium Earned | ($000's) Inc Loss + ALAE | ($000's) Proj Ult excld ULAE | excld ULAE Ult Loss Cost | % Ult Loss Ratio |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 20161 | 37,220 | 981,136 | 399,219 | 201,777 | 201,575 | 205.45 | 50.49% |
| 20162 | 43,331 | 999,686 | 396,526 | 252,013 | 251,509 | 251.59 | 63.43% |
| 20171 | 42,097 | 978,737 | 385,657 | 240,900 | 237,045 | 242.20 | 61.47% |
| 20172 | 44,206 | 1,009,156 | 394,807 | 272,119 | 259,058 | 256.71 | 65.62% |
| 20181 | 44,666 | 996,658 | 390,407 | 294,181 | 250,054 | 250.89 | 64.05% |
| 20182 | 43,739 | 1,029,951 | 403,913 | 405,107 | 249,141 | 241.90 | 61.68% |
| **Total** | **255,259** | **5,995,324** | **2,370,528** | **1,666,098** | **1,448,382** | **241.59** | **61.10%** |

| Accident Year | Ultimate Number of Claims | Car Years Earned | ($000's) Premium Earned | ($000's) Inc Loss + ALAE | ($000's) Proj Ult excld ULAE | excld ULAE Ult Loss Cost | % Ult Loss Ratio | GISA ULAE per earned vehicles | GISA ULAE Factor |
|---|---|---|---|---|---|---|---|---|---|
| | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
| 2016 | 80,551 | 1,980,822 | 795,745 | 453,790 | 453,084 | 228.74 | 56.94% | 19.40 | 8.48% |
| 2017 | 86,303 | 1,987,893 | 780,463 | 513,019 | 496,103 | 249.56 | 63.57% | 22.84 | 9.15% |
| 2018 | 88,405 | 2,026,609 | 794,320 | 699,289 | 499,195 | 246.32 | 62.85% | 24.80 | 10.07% |
| **Total** | **255,259** | **5,995,324** | **2,370,528** | **1,666,098** | **1,448,382** | **241.59** | **61.10%** | **22.37** | |

| Data from Accident Year | Trended per earned vehicles: ULAE | ULAE factor | Ult Loss Cost excld. ULAE | ULAE per earned vehicle | Ult Loss Cost incld. ULAE |
|---|---|---|---|---|---|
| | (17) | (18) | (19) | (20) | (21) |
| 2016 | 22.78 | 8.48% | 268.56 | 24.84 | 293.40 |
| 2017 | 26.16 | 9.15% | 285.86 | 26.44 | 312.31 |
| 2018 | 27.72 | 10.07% | 275.27 | 25.46 | 300.73 |
| Average ULAE Factor | | 9.23% | | | |
| Selected ULAE Factor | | 9.25% | | | |

(1) to (14) 2018-2 Incurred Loss Development Factor PPA excld. Farmers AB (Revised) Report (Bulletin No: 2019-15)
(15) Ultimate Loss Cost From 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16) less Col 13
(16) Col 15 / Col 13
(17) Col 15 x Col 1 [Loss Trend Factors]
(18) Col 17 / Col 19
(19) Col 13 x Col 1 [Loss Trend Factors]
(20) Col 19 x Selected ULAE Factor
(21) Col 19 + Col 20

Trended Ultimate Loss And Loss Adjustment Expense & Ultimate Loss Cost | Location: Alberta | Appendix 5.4-6

Using Data as of December 31, 2018

Comprehensive

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| Accident Year | Loss Trend Factors | Average Accident Date (Trend From) | Trend Period | Past Loss Trend | Future Loss Trend | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Prior to Apr 1, 2019 | April 1, 2019 to Jan 1, 2020 | Jan 1, 2020 to Jan 1, 2021 | Jan 1, 2021 to Jan 1, 2022 | Jan 1, 2022 to Jan 1, 2023 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 2016 | 1.5058 | 1 Jul, 2016 | 6.5 | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% |
| 2017 | 1.4139 | 1 Jul, 2017 | 5.5 | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% |
| 2018 | 1.3276 | 1 Jul, 2018 | 4.5 | 6.50% | 6.50% | 6.50% | 6.50% | 6.50% |

(1) Based on Col 4 to Col 7.
(4) & (5) These factors are from March 27, 2020 Bulletin: 01-2020 Automobile Insurance Rate Board.
(6) to (8) Same as Col 5

| Accident Year | Ultimate Number of Claims | Car Years Earned | ($000's) Premium Earned | ($000's) Inc Loss + ALAE | ($000's) Proj Ult excld ULAE | excld ULAE Ult Loss Cost | excld ULAE % Ult Loss Ratio |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 20161 | 34,555 | 1,176,873 | 258,108 | 174,270 | 174,270 | 148.08 | 67.52% |
| 20162 | 65,981 | 1,187,861 | 263,094 | 381,698 | 381,698 | 321.33 | 145.08% |
| 20171 | 25,845 | 1,169,453 | 261,930 | 136,377 | 136,514 | 116.73 | 52.12% |
| 20172 | 40,696 | 1,196,484 | 273,281 | 240,293 | 240,773 | 201.23 | 88.10% |
| 20181 | 24,588 | 1,187,074 | 278,482 | 129,528 | 129,528 | 109.12 | 46.51% |
| 20182 | 42,084 | 1,213,689 | 295,175 | 250,531 | 253,537 | 208.90 | 85.89% |
| **Total** | **233,749** | **7,131,434** | **1,630,070** | **1,312,697** | **1,316,321** | **184.58** | **80.75%** |

| Accident Year | Ultimate Number of Claims | Car Years Earned | ($000's) Premium Earned | ($000's) Inc Loss + ALAE | ($000's) Proj Ult excld ULAE | ($000's) Catastrophic Loss Expense | ($000's) Normal Loss Ult excld ULAE | excld ULAE Ult Loss Cost incld. CAT | excld ULAE & CAT Ult Loss Cost | excld ULAE & CAT % Ult Loss Ratio | GISA ULAE per earned vehicles | GISA ULAE Factor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) |
| 2016 | 100,536 | 2,364,734 | 521,202 | 555,968 | 555,968 | 241,728 | 314,240 | 235.11 | 132.89 | 60.29% | 19.95 | 8.48% |
| 2017 | 66,541 | 2,365,937 | 535,211 | 376,670 | 377,287 | 74,911 | 302,376 | 159.47 | 127.80 | 56.50% | 14.59 | 9.15% |
| 2018 | 66,672 | 2,400,763 | 573,657 | 380,059 | 383,066 | 89,376 | 293,690 | 159.56 | 122.33 | 51.20% | 16.07 | 10.07% |
| **Total** | **233,749** | **7,131,434** | **1,630,070** | **1,312,697** | **1,316,321** | **406,015** | **910,305** | **184.58** | **127.65** | **55.84%** | **16.86** | |

| Data from Accident Year | ULAE | ULAE factor | Trended per earned vehicles: Incld. CAT Ult Loss Cost excld. ULAE | Excluding CAT Ult Loss Cost excld. ULAE | Excluding CAT ULAE per earned vehicle | Excluding CAT Ult Loss Cost incld. ULAE |
|---|---|---|---|---|---|---|
| | (20) | (21) | (22) | (23) | (24) | (25) |
| 2016 | 30.04 | 8.48% | 354.03 | 200.10 | 18.51 | 218.61 |
| 2017 | 20.63 | 9.15% | 225.47 | 180.70 | 16.72 | 197.42 |
| 2018 | 21.33 | 10.07% | 211.83 | 162.41 | 15.02 | 177.43 |
| Average ULAE Factor | | 9.23% | | | | |
| Selected ULAE Factor | | 9.25% | | | | |

(1) to (12) 2018-2 Incurred Loss Development Factor PPA excld. Farmers AB (Revised) Report (Bulletin No: 2019-15)
(13) Catastrophe Report Alberta 2002-2018 (Bulletin No: 2019-47)
(14) Col 12 - Col 13
(16) Col 14 / Col 9
(17) Col 14 / Col 10
(18) Ultimate Loss Cost From 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16) - Col 15
(19) Col 18 / Col 15
(20) Col 18 x Col 1 [Loss Trend Factors]
(21) Col 20 / Col 22
(22) Col 15 x Col 1 [Loss Trend Factors]
(23) Col 16 x Col 1 [Loss Trend Factors]
(24) Col 23 x Selected ULAE Factor
(25) Col 23 + Col 24

Trended Ultimate Loss And Loss Adjustment Expense & Ultimate Loss Cost | Location: Alberta | Appendix 5.4-7

Using Data as of December 31, 2018

Specified Perils

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| Accident Year | Loss Trend Factors | Average Accident Date (Trend From) | Trend Period | Past Loss Trend | Future Loss Trend | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Prior to Apr 1, 2019 | April 1, 2019 to Jan 1, 2020 | Jan 1, 2020 to Jan 1, 2021 | Jan 1, 2021 to Jan 1, 2022 | Jan 1, 2022 to Jan 1, 2023 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 2016 | 1.5524 | 1 Jul, 2016 | 6.5 | 7.00% | 7.00% | 7.00% | 7.00% | 7.00% |
| 2017 | 1.4508 | 1 Jul, 2017 | 5.5 | 7.00% | 7.00% | 7.00% | 7.00% | 7.00% |
| 2018 | 1.3559 | 1 Jul, 2018 | 4.5 | 7.00% | 7.00% | 7.00% | 7.00% | 7.00% |

(1) Based on Col 4 to Col 7.
(4) & (5) These factors are from March 27, 2020 Bulletin: 01-2020 Automobile Insurance Rate Board.
(6) to (8) Same as Col 5

| Accident Year | Ultimate Number of Claims | Car Years Earned | ($000's) Premium Earned | ($000's) Inc Loss + ALAE | ($000's) Proj Ult excld ULAE | excld ULAE Ult Loss Cost | excld ULAE % Ult Loss Ratio |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 20161 | 71 | 8,882 | 913 | 444 | 443 | 49.93 | 48.55% |
| 20162 | 139 | 8,953 | 925 | 624 | 622 | 69.50 | 67.25% |
| 20171 | 71 | 9,329 | 964 | 376 | 375 | 40.20 | 38.91% |
| 20172 | 129 | 9,803 | 1,004 | 677 | 676 | 68.97 | 67.34% |
| 20181 | 70 | 10,823 | 1,075 | 515 | 502 | 46.39 | 46.71% |
| 20182 | 105 | 10,691 | 1,054 | 686 | 629 | 58.87 | 59.71% |
| **Total** | **585** | **58,481** | **5,936** | **3,322** | **3,248** | **55.55** | **54.73%** |

| Accident Year | Ultimate Number of Claims | Car Years Earned | ($000's) Premium Earned | ($000's) Inc Loss + ALAE | ($000's) Proj Ult excld ULAE | ($000's) Catastrophic Loss Expense | ($000's) Normal Loss Ult excld ULAE | excld ULAE Ult Loss Cost incld. CAT | excld ULAE & CAT Ult Loss Cost | excld ULAE & CAT % Ult Loss Ratio | GISA ULAE per earned vehicles | GISA ULAE Factor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) |
| 2016 | 210 | 17,835 | 1,839 | 1,068 | 1,066 | 249 | 816 | 59.75 | 45.77 | 44.40% | 5.07 | 8.49% |
| 2017 | 200 | 19,132 | 1,968 | 1,054 | 1,051 | 197 | 855 | 54.94 | 44.67 | 43.43% | 5.03 | 9.15% |
| 2018 | 175 | 21,514 | 2,129 | 1,201 | 1,132 | 146 | 986 | 52.59 | 45.82 | 46.30% | 5.30 | 10.07% |
| **Total** | **585** | **58,481** | **5,936** | **3,322** | **3,248** | **592** | **2,657** | **55.55** | **45.43** | **44.76%** | **5.14** | |

| Data from Accident Year | ULAE | ULAE factor | Trended per earned vehicles: Incld. CAT Ult Loss Cost excld. ULAE | Excluding CAT Ult Loss Cost excld. ULAE | Excluding CAT ULAE per earned vehicle | Excluding CAT Ult Loss Cost incld. ULAE |
|---|---|---|---|---|---|---|
| | (20) | (21) | (22) | (23) | (24) | (25) |
| 2016 | 7.88 | 8.49% | 92.76 | 71.06 | 6.57 | 77.63 |
| 2017 | 7.30 | 9.15% | 79.71 | 64.81 | 5.99 | 70.80 |
| 2018 | 7.18 | 10.07% | 71.31 | 62.13 | 5.75 | 67.88 |
| Average ULAE Factor | | 9.24% | | | | |
| Selected ULAE Factor | | 9.25% | | | | |

(1) to (12) 2018-2 Incurred Loss Development Factor PPA excld. Farmers AB (Revised) Report (Bulletin No: 2019-15)
(13) Catastrophe Report Alberta 2002-2018 (Bulletin No: 2019-47)
(14) Col 12 - Col 13
(16) Col 14 / Col 9
(17) Col 14 / Col 10
(18) Ultimate Loss Cost From 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16) - Col 15
(19) Col 18 / Col 15
(20) Col 18 x Col 1 [Loss Trend Factors]
(21) Col 20 / Col 22
(22) Col 15 x Col 1 [Loss Trend Factors]
(23) Col 16 x Col 1 [Loss Trend Factors]
(24) Col 23 x Selected ULAE Factor
(25) Col 23 + Col 24

Trended Ultimate Loss And Loss Adjustment Expense & Ultimate Loss Cost | Location: Alberta | Appendix 5.4-8

Using Data as of December 31, 2018

All Perils

Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| Accident Year | Loss Trend Factors | Average Accident Date (Trend From) | Trend Period | Past Loss Trend | Future Loss Trend | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Prior to Apr 1, 2019 | April 1, 2019 to Jan 1, 2020 | Jan 1, 2020 to Jan 1, 2021 | Jan 1, 2021 to Jan 1, 2022 | Jan 1, 2022 to Jan 1, 2023 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 2016 | 1.2904 | 1 Jul, 2016 | 6.5 | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% |
| 2017 | 1.2407 | 1 Jul, 2017 | 5.5 | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% |
| 2018 | 1.1930 | 1 Jul, 2018 | 4.5 | 4.00% | 4.00% | 4.00% | 4.00% | 4.00% |

(1) Based on Col 4 to Col 7.
(4) & (5) These factors are from March 27, 2020 Bulletin: 01-2020 Automobile Insurance Rate Board.
(6) to (8) Same as Col 5

| Accident Year | Ultimate Number of Claims | Car Years Earned | ($000's) Premium Earned | ($000's) Inc Loss + ALAE | ($000's) Proj Ult excld ULAE | excld ULAE Ult Loss Cost | excld ULAE % Ult Loss Ratio |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 20161 | 1,215 | 11,561 | 7,546 | 3,948 | 3,956 | 342.19 | 52.43% |
| 20162 | 1,743 | 11,115 | 7,688 | 6,473 | 6,493 | 584.13 | 84.45% |
| 20171 | 1,231 | 10,582 | 7,309 | 4,265 | 4,244 | 401.01 | 58.06% |
| 20172 | 1,150 | 10,716 | 7,477 | 4,799 | 4,664 | 435.26 | 62.38% |
| 20181 | 936 | 10,335 | 7,410 | 4,996 | 4,592 | 444.28 | 61.97% |
| 20182 | 1,025 | 10,674 | 7,839 | 6,078 | 5,014 | 469.76 | 63.97% |
| **Total** | **7,300** | **64,983** | **45,269** | **30,559** | **28,962** | **445.69** | **63.98%** |

| Accident Year | Ultimate Number of Claims | Car Years Earned | ($000's) Premium Earned | ($000's) Inc Loss + ALAE | ($000's) Proj Ult excld ULAE | ($000's) Catastrophic Loss Expense | ($000's) Normal Loss Ult excld ULAE | excld ULAE Ult Loss Cost incld. CAT | excld ULAE & CAT Ult Loss Cost | excld ULAE & CAT % Ult Loss Ratio | GISA ULAE per earned vehicles | GISA ULAE Factor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) |
| 2016 | 2,958 | 22,676 | 15,234 | 10,421 | 10,449 | 1,773 | 8,675 | 460.78 | 382.58 | 56.95% | 39.11 | 8.49% |
| 2017 | 2,381 | 21,298 | 14,787 | 9,063 | 8,908 | 639 | 8,269 | 418.24 | 388.26 | 55.92% | 38.27 | 9.15% |
| 2018 | 1,961 | 21,009 | 15,249 | 11,074 | 9,606 | 980 | 8,626 | 457.23 | 410.58 | 56.57% | 46.04 | 10.07% |
| **Total** | **7,300** | **64,983** | **45,269** | **30,559** | **28,962** | **3,392** | **25,570** | **445.69** | **393.49** | **56.49%** | **41.08** | |

| Data from Accident Year | ULAE | ULAE factor | Trended per earned vehicles: Incld. CAT Ult Loss Cost excld. ULAE | Excluding CAT Ult Loss Cost excld. ULAE | Excluding CAT ULAE per earned vehicle | Excluding CAT Ult Loss Cost incld. ULAE |
|---|---|---|---|---|---|---|
| | (20) | (21) | (22) | (23) | (24) | (25) |
| 2016 | 50.46 | 8.49% | 594.58 | 493.68 | 45.67 | 539.34 |
| 2017 | 47.48 | 9.15% | 518.93 | 481.73 | 44.56 | 526.29 |
| 2018 | 54.93 | 10.07% | 545.48 | 489.83 | 45.31 | 535.14 |
| Average ULAE Factor | | 9.24% | | | | |
| Selected ULAE Factor | | 9.25% | | | | |

(1) to (12) 2018-2 Incurred Loss Development Factor PPA excld. Farmers AB (Revised) Report (Bulletin No: 2019-15)
(13) Catastrophe Report Alberta 2002-2018 (Bulletin No: 2019-47)
(14) Col 12 - Col 13
(16) Col 14 / Col 9
(17) Col 14 / Col 10
(18) Ultimate Loss Cost From 2018 Actual Loss Ratio Exhibit (Bulletin No: 2019-16) - Col 15
(19) Col 18 / Col 15
(20) Col 18 x Col 1 [Loss Trend Factors]
(21) Col 20 / Col 22
(22) Col 15 x Col 1 [Loss Trend Factors]
(23) Col 16 x Col 1 [Loss Trend Factors]
(24) Col 23 x Selected ULAE Factor
(25) Col 23 + Col 24

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# APPENDIX 5.5

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Specified Peril CAT Loading

Specified Perils

| Accident Year | Total Loss & Expense Amount | Total Claim Count | Number of Earned Vehicles | Earned Premium |
|---|---|---|---|---|
| 2009 | 521,154 | 128 | 19,380 | 1,249,586 |
| 2010 | 624,934 | 168 | 19,442 | 1,425,715 |
| 2011 | 541,463 | 131 | 19,145 | 1,520,035 |
| 2012 | 861,720 | 204 | 18,652 | 1,600,271 |
| 2013 | 645,944 | 153 | 17,827 | 1,661,071 |
| 2014 | 853,425 | 183 | 17,378 | 1,691,868 |
| 2015 | 787,525 | 186 | 17,332 | 1,745,561 |
| 2016 | 1,067,851 | 210 | 17,835 | 1,838,630 |
| 2017 | 1,053,637 | 200 | 19,132 | 1,967,879 |
| 2018 | 1,200,598 | 176 | 21,514 | 2,129,065 |

| Accident Year | Catastrophic Loss & Expense Amount | Catastrophic Claim Count | Catastrophic Claim Severity | Catastrophic Claim Frequency | Catastrophic Loss Cost | Catastrophic Loss Ratio | CAT Losses as a % of Normal Losses |
|---|---|---|---|---|---|---|---|
| 2009 | 190,258 | 35 | 5,436 | 0.18 | 9.82 | 15 | 57.5% |
| 2010 | 239,412 | 79 | 3,031 | 0.41 | 12.31 | 17 | 62.1% |
| 2011 | 158,550 | 36 | 4,404 | 0.19 | 8.28 | 10 | 41.4% |
| 2012 | 467,415 | 120 | 3,895 | 0.64 | 25.06 | 29 | 118.5% |
| 2013 | 250,727 | 66 | 3,799 | 0.37 | 14.06 | 15 | 63.4% |
| 2014 | 337,333 | 82 | 4,114 | 0.47 | 19.41 | 20 | 65.4% |
| 2015 | 261,208 | 84 | 3,110 | 0.48 | 15.07 | 15 | 49.6% |
| 2016 | 249,327 | 68 | 3,667 | 0.38 | 13.98 | 14 | 30.5% |
| 2017 | 196,511 | 44 | 4,466 | 0.23 | 10.27 | 10 | 22.9% |
| 2018 | 145,695 | 26 | 5,604 | 0.12 | 6.77 | 7 | 13.8% |
| | | | | | | 10-years average | 52.5% |
| | | | | | | Selected | 52.5% |

| Accident Year | Normal Loss & Expense Amount | Normal Claims Count | Normal Claims Severity | Normal Claim Frequency | Normal Loss Cost | Normal Loss Ratio |
|---|---|---|---|---|---|---|
| 2009 | 330,896 | 93 | 3,558 | 0.48 | 17.07 | 26 |
| 2010 | 385,522 | 89 | 4,332 | 0.46 | 19.83 | 27 |
| 2011 | 382,913 | 95 | 4,031 | 0.50 | 20.00 | 25 |
| 2012 | 394,305 | 84 | 4,694 | 0.45 | 21.14 | 25 |
| 2013 | 395,217 | 87 | 4,543 | 0.49 | 22.17 | 24 |
| 2014 | 516,092 | 101 | 5,110 | 0.58 | 29.70 | 31 |
| 2015 | 526,317 | 102 | 5,160 | 0.59 | 30.37 | 30 |
| 2016 | 818,524 | 142 | 5,764 | 0.80 | 45.89 | 45 |
| 2017 | 857,126 | 156 | 5,494 | 0.82 | 44.80 | 44 |
| 2018 | 1,054,903 | 150 | 7,033 | 0.70 | 49.03 | 50 |

# APPENDIX 5.6

Selected Payment Pattern

**Private Passenger Automobile - Excluding Farmers/Voitures de tourisme - sauf exploitants agricoles Third Party Liability/Respondsabilité civile**
**Paid Loss And Expense Amount ($000)/Montant de sinistres et de frais réglés ($000) Alberta/Alberta**
**Bodily Injury - Tort/Dommages corporels - Tort**
**as of December 31, 2018**

| | Developed Months | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accident Year | 012 | 024 | 036 | 048 | 060 | 072 | 084 | 096 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | PROJECTED ULT LOSS |
| 2004 | 25,932 | 95,413 | 180,690 | 249,694 | 313,825 | 368,898 | 406,519 | 432,684 | 450,837 | 464,053 | 469,430 | 473,771 | 475,802 | 476,333 | 477,247 | 478,021 |
| 2005 | 23,834 | 71,333 | 119,130 | 170,234 | 231,961 | 281,735 | 319,023 | 354,591 | 375,869 | 386,323 | 393,506 | 396,881 | 403,599 | 404,400 | | 406,900 |
| 2006 | 22,253 | 66,905 | 118,745 | 178,441 | 244,338 | 303,112 | 352,175 | 381,363 | 398,659 | 416,841 | 430,356 | 435,299 | 441,605 | | | 443,513 |
| 2007 | 20,464 | 64,567 | 119,451 | 190,787 | 250,754 | 314,376 | 360,998 | 394,942 | 418,204 | 434,702 | 443,243 | 450,028 | | | | 454,881 |
| 2008 | 19,111 | 66,357 | 122,708 | 193,251 | 271,037 | 349,119 | 405,897 | 443,053 | 463,811 | 476,076 | 482,860 | | | | | 492,473 |
| 2009 | 17,780 | 66,816 | 125,280 | 193,632 | 262,124 | 336,027 | 391,401 | 428,066 | 452,663 | 465,531 | | | | | | 474,959 |
| 2010 | 21,830 | 72,327 | 136,357 | 212,860 | 288,193 | 347,354 | 391,706 | 422,736 | 442,427 | | | | | | | 465,882 |
| 2011 | 22,376 | 76,960 | 152,002 | 237,319 | 323,493 | 387,281 | 443,252 | 473,013 | | | | | | | | 513,621 |
| 2012 | 24,760 | 87,585 | 183,593 | 280,822 | 377,018 | 455,697 | 517,988 | | | | | | | | | 605,470 |
| 2013 | 20,808 | 91,836 | 194,566 | 302,160 | 419,380 | 513,170 | | | | | | | | | | 675,562 |
| 2014 | 27,431 | 105,516 | 216,670 | 351,393 | 486,351 | | | | | | | | | | | 776,807 |
| 2015 | 24,699 | 98,170 | 249,719 | 410,311 | | | | | | | | | | | | 904,253 |
| 2016 | 24,522 | 120,299 | 285,467 | | | | | | | | | | | | | 1,005,219 |
| 2017 | 27,852 | 127,728 | | | | | | | | | | | | | | 1,024,291 |
| 2018 | 26,404 | | | | | | | | | | | | | | | 1,028,623 |

**Percentage of ultimate amount at the end of each development period**

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 | 5.42 | 19.96 | 37.80 | 52.23 | 65.65 | 77.17 | 85.04 | 90.52 | 94.31 | 97.08 | 98.20 | 99.11 | 99.54 | 99.65 | 99.84 | | | |
| 2005 | 5.86 | 17.53 | 29.28 | 41.84 | 57.01 | 69.24 | 78.40 | 87.14 | 92.37 | 94.94 | 96.71 | 97.54 | 99.19 | 99.39 | | | | |
| 2006 | 5.02 | 15.09 | 26.77 | 40.23 | 55.09 | 68.34 | 79.41 | 85.99 | 89.89 | 93.99 | 97.03 | 98.15 | 99.57 | | | | | |
| 2007 | 4.50 | 14.19 | 26.26 | 41.94 | 55.13 | 69.11 | 79.36 | 86.82 | 91.94 | 95.56 | 97.44 | 98.93 | | | | | | |
| 2008 | 3.88 | 13.47 | 24.92 | 39.24 | 55.04 | 70.89 | 82.42 | 89.97 | 94.18 | 96.67 | 98.05 | | | | | | | |
| 2009 | 3.74 | 14.07 | 26.38 | 40.77 | 55.19 | 70.75 | 82.41 | 90.13 | 95.31 | 98.01 | | | | | | | | |
| 2010 | 4.69 | 15.52 | 29.27 | 45.69 | 61.86 | 74.56 | 84.08 | 90.74 | 94.97 | | | | | | | | | |
| 2011 | 4.36 | 14.98 | 29.59 | 46.21 | 62.98 | 75.40 | 86.30 | 92.09 | | | | | | | | | | |
| 2012 | 4.09 | 14.47 | 30.32 | 46.38 | 62.27 | 75.26 | 85.55 | | | | | | | | | | | |
| 2013 | 3.08 | 13.59 | 28.80 | 44.73 | 62.08 | 75.96 | | | | | | | | | | | | |
| 2014 | 3.53 | 13.58 | 27.89 | 45.24 | 62.61 | | | | | | | | | | | | | |
| 2015 | 2.73 | 10.86 | 27.62 | 45.38 | | | | | | | | | | | | | | |
| 2016 | 2.44 | 11.97 | 28.40 | | | | | | | | | | | | | | | |
| 2017 | 2.72 | 12.47 | | | | | | | | | | | | | | | | |
| 2018 | 2.57 | | | | | | | | | | | | | | | | | |
| Avg | 3.91 | 14.41 | 28.72 | 44.16 | 59.54 | 72.67 | 82.55 | 89.17 | 93.28 | 96.04 | 97.49 | 98.43 | 99.43 | 99.52 | 99.84 | | | |
| Wtd Avg | 3.59 | 13.89 | 28.64 | 44.39 | 59.92 | 72.97 | 82.78 | 89.28 | 93.34 | 96.10 | 97.52 | 98.47 | 99.44 | 99.53 | 99.84 | | | |
| Selected | 3.75 | 14.15 | 28.68 | 44.27 | 59.73 | 72.82 | 82.66 | 89.23 | 93.31 | 96.07 | 97.50 | 98.45 | 99.44 | 99.58 | 99.72 | 99.86 | 100.00 | 100.00 |
| Incremental | 10.40 | 14.53 | 15.59 | 15.46 | 13.09 | 9.84 | 6.57 | 4.08 | 2.76 | 1.43 | 0.95 | 0.99 | 0.14 | 0.14 | 0.14 | 0.14 | | |

**Private Passenger Automobile - Excluding Farmers/Voitures de tourisme - sauf exploitants agricoles Third Party Liability/Respondsabilité civile**
**Paid Loss And Expense Amount ($000)/Montant de sinistres et de frais réglés ($000) Alberta/Alberta**
**Property Damage/Dommages matériels**
**as of December 31, 2018**

| | Developed Months | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accident Year | 012 | 024 | 036 | 048 | 060 | 072 | 084 | 096 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | PROJECTED ULT LOSS |
| 2004 | 100,692 | 153,297 | 156,917 | 157,361 | 157,593 | 157,787 | 157,796 | 157,807 | 157,881 | 157,896 | 157,888 | 157,897 | 157,888 | 157,888 | 157,888 | 157,888 |
| 2005 | 109,876 | 175,892 | 180,448 | 180,938 | 181,241 | 181,544 | 182,531 | 182,602 | 182,630 | 182,639 | 182,814 | 182,808 | 182,810 | 182,810 | | 182,816 |
| 2006 | 117,603 | 211,492 | 226,401 | 227,560 | 227,909 | 228,152 | 228,487 | 228,625 | 228,634 | 228,811 | 228,805 | 228,812 | 228,813 | | | 228,825 |
| 2007 | 128,632 | 251,369 | 273,660 | 275,052 | 276,123 | 276,612 | 276,692 | 276,720 | 276,683 | 276,662 | 276,658 | 276,652 | | | | 276,654 |
| 2008 | 148,571 | 280,057 | 293,737 | 295,517 | 296,379 | 297,320 | 297,488 | 297,518 | 297,635 | 297,649 | 297,647 | | | | | 297,647 |
| 2009 | 181,760 | 289,744 | 296,310 | 297,042 | 298,173 | 299,314 | 299,382 | 299,424 | 299,452 | 299,499 | | | | | | 299,505 |
| 2010 | 173,158 | 284,722 | 293,040 | 294,321 | 294,922 | 295,227 | 295,493 | 295,521 | 295,527 | | | | | | | 295,549 |
| 2011 | 197,710 | 311,042 | 320,901 | 321,997 | 322,715 | 323,852 | 323,930 | 323,954 | | | | | | | | 323,962 |
| 2012 | 176,163 | 323,563 | 338,225 | 339,646 | 340,344 | 340,417 | 340,505 | | | | | | | | | 340,515 |
| 2013 | 188,398 | 353,300 | 370,001 | 371,444 | 372,394 | 372,712 | | | | | | | | | | 373,262 |
| 2014 | 206,040 | 373,752 | 392,616 | 394,694 | 395,234 | | | | | | | | | | | 395,681 |
| 2015 | 222,000 | 387,807 | 405,601 | 407,302 | | | | | | | | | | | | 408,069 |
| 2016 | 210,448 | 374,484 | 388,893 | | | | | | | | | | | | | 390,607 |
| 2017 | 241,895 | 409,631 | | | | | | | | | | | | | | 426,057 |
| 2018 | 255,884 | | | | | | | | | | | | | | | 438,592 |

**Percentage of ultimate amount at the end of each development period**

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 | 63.77 | 97.09 | 99.38 | 99.67 | 99.81 | 99.94 | 99.94 | 99.95 | 100.00 | 100.01 | 100.00 | 100.01 | 100.00 | 100.00 | 100.00 | | | |
| 2005 | 60.10 | 96.21 | 98.70 | 98.97 | 99.14 | 99.30 | 99.84 | 99.88 | 99.90 | 99.90 | 100.00 | 100.00 | 100.00 | 100.00 | | | | |
| 2006 | 51.39 | 92.43 | 98.94 | 99.45 | 99.60 | 99.71 | 99.85 | 99.91 | 99.92 | 99.99 | 99.99 | 99.99 | 99.99 | | | | | |
| 2007 | 46.50 | 90.86 | 98.92 | 99.42 | 99.81 | 99.98 | 100.01 | 100.02 | 100.01 | 100.00 | 100.00 | 100.00 | | | | | | |
| 2008 | 49.92 | 94.09 | 98.69 | 99.28 | 99.57 | 99.89 | 99.95 | 99.96 | 100.00 | 100.00 | 100.00 | | | | | | | |
| 2009 | 60.69 | 96.74 | 98.93 | 99.18 | 99.56 | 99.94 | 99.96 | 99.97 | 99.98 | 100.00 | | | | | | | | |
| 2010 | 58.59 | 96.34 | 99.15 | 99.58 | 99.79 | 99.89 | 99.98 | 99.99 | 99.99 | | | | | | | | | |
| 2011 | 61.03 | 96.01 | 99.06 | 99.39 | 99.62 | 99.97 | 99.99 | 100.00 | | | | | | | | | | |
| 2012 | 51.73 | 95.02 | 99.33 | 99.74 | 99.95 | 99.97 | 100.00 | | | | | | | | | | | |
| 2013 | 50.47 | 94.65 | 99.13 | 99.51 | 99.77 | 99.85 | | | | | | | | | | | | |
| 2014 | 52.07 | 94.46 | 99.23 | 99.75 | 99.89 | | | | | | | | | | | | | |
| 2015 | 54.40 | 95.03 | 99.40 | 99.81 | | | | | | | | | | | | | | |
| 2016 | 53.88 | 95.87 | 99.56 | | | | | | | | | | | | | | | |
| 2017 | 56.78 | 96.14 | | | | | | | | | | | | | | | | |
| 2018 | 58.34 | | | | | | | | | | | | | | | | | |
| Avg | 55.31 | 95.07 | 99.11 | 99.48 | 99.68 | 99.84 | 99.95 | 99.96 | 99.97 | 99.98 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | | | |
| Wtd Avg | 54.98 | 95.07 | 99.14 | 99.51 | 99.71 | 99.87 | 99.96 | 99.97 | 99.97 | 99.99 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | | | |
| Selected | 55.15 | 95.07 | 99.12 | 99.50 | 99.69 | 99.86 | 99.97 | 99.98 | 99.99 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Incremental | 39.92 | 4.05 | 0.38 | 0.19 | 0.17 | 0.11 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |

**Private Passenger Automobile - Excluding Farmers/Voitures de tourisme - sauf exploitants agricoles Accident Benefits/Indemnités d'accident**
**Paid Loss And Expense Amount ($000)/Montant de sinistres et de frais réglés ($000) Alberta/Alberta**
**Coverage Total/Toute l'experience**
**as of December 31, 2018**

| | Developed Months | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accident Year | 012 | 024 | 036 | 048 | 060 | 072 | 084 | 096 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | PROJECTED ULT LOSS |
| 2004 | 25,115 | 50,227 | 54,581 | 55,223 | 55,451 | 55,623 | 56,007 | 56,276 | 56,398 | 56,505 | 56,578 | 56,641 | 56,876 | 56,945 | 57,007 | 57,614 |
| 2005 | 30,152 | 52,843 | 58,609 | 59,459 | 60,877 | 61,313 | 61,657 | 64,224 | 64,353 | 64,614 | 64,794 | 64,953 | 64,996 | 65,242 | | 65,560 |
| 2006 | 30,363 | 54,788 | 60,015 | 60,839 | 61,176 | 61,673 | 62,853 | 63,542 | 63,646 | 63,876 | 63,889 | 63,959 | 64,008 | | | 64,310 |
| 2007 | 33,201 | 60,142 | 66,402 | 67,574 | 68,930 | 69,281 | 70,177 | 71,342 | 71,389 | 71,418 | 71,421 | 72,020 | | | | 72,045 |
| 2008 | 35,548 | 65,355 | 72,942 | 75,329 | 75,723 | 76,224 | 76,941 | 77,124 | 77,227 | 77,299 | 77,391 | | | | | 78,100 |
| 2009 | 35,815 | 66,598 | 73,376 | 75,509 | 76,097 | 76,696 | 78,698 | 78,749 | 78,910 | 79,418 | | | | | | 79,590 |
| 2010 | 37,122 | 66,418 | 72,974 | 74,583 | 75,727 | 76,611 | 77,289 | 77,496 | 77,564 | | | | | | | 78,327 |
| 2011 | 40,102 | 69,339 | 76,385 | 79,105 | 79,363 | 79,763 | 80,259 | 80,358 | | | | | | | | 80,752 |
| 2012 | 40,135 | 73,962 | 83,200 | 85,288 | 86,563 | 87,871 | 88,372 | | | | | | | | | 91,559 |
| 2013 | 42,422 | 77,025 | 86,642 | 88,003 | 88,861 | 89,557 | | | | | | | | | | 94,231 |
| 2014 | 44,909 | 82,087 | 92,744 | 94,138 | 94,773 | | | | | | | | | | | 97,791 |
| 2015 | 48,521 | 95,375 | 108,893 | 111,903 | | | | | | | | | | | | 121,394 |
| 2016 | 52,597 | 105,304 | 120,811 | | | | | | | | | | | | | 127,826 |
| 2017 | 58,379 | 118,497 | | | | | | | | | | | | | | 148,242 |
| 2018 | 63,227 | | | | | | | | | | | | | | | 162,728 |

**Percentage of ultimate amount at the end of each development period**

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 | 43.59 | 87.18 | 94.74 | 95.85 | 96.25 | 96.54 | 97.21 | 97.68 | 97.89 | 98.08 | 98.20 | 98.31 | 98.72 | 98.84 | 98.95 | | | |
| 2005 | 45.99 | 80.60 | 89.40 | 90.69 | 92.86 | 93.52 | 94.05 | 97.96 | 98.16 | 98.56 | 98.83 | 99.07 | 99.14 | 99.52 | | | | |
| 2006 | 47.21 | 85.19 | 93.32 | 94.60 | 95.13 | 95.90 | 97.73 | 98.81 | 98.97 | 99.33 | 99.35 | 99.45 | 99.53 | | | | | |
| 2007 | 46.08 | 83.48 | 92.17 | 93.79 | 95.68 | 96.16 | 97.41 | 99.02 | 99.09 | 99.13 | 99.13 | 99.97 | | | | | | |
| 2008 | 45.52 | 83.68 | 93.40 | 96.45 | 96.96 | 97.60 | 98.52 | 98.75 | 98.88 | 98.97 | 99.09 | | | | | | | |
| 2009 | 45.00 | 83.68 | 92.19 | 94.87 | 95.61 | 96.36 | 98.88 | 98.94 | 99.15 | 99.78 | | | | | | | | |
| 2010 | 47.39 | 84.80 | 93.17 | 95.22 | 96.68 | 97.81 | 98.67 | 98.94 | 99.03 | | | | | | | | | |
| 2011 | 49.66 | 85.87 | 94.59 | 97.96 | 98.28 | 98.77 | 99.39 | 99.51 | | | | | | | | | | |
| 2012 | 43.84 | 80.78 | 90.87 | 93.15 | 94.54 | 95.97 | 96.52 | | | | | | | | | | | |
| 2013 | 45.02 | 81.74 | 91.95 | 93.39 | 94.30 | 95.04 | | | | | | | | | | | | |
| 2014 | 45.92 | 83.94 | 94.84 | 96.26 | 96.91 | | | | | | | | | | | | | |
| 2015 | 39.97 | 78.57 | 89.70 | 92.18 | | | | | | | | | | | | | | |
| 2016 | 41.15 | 82.38 | 94.51 | | | | | | | | | | | | | | | |
| 2017 | 39.38 | 79.93 | | | | | | | | | | | | | | | | |
| 2018 | 38.85 | | | | | | | | | | | | | | | | | |
| Avg | 44.31 | 82.99 | 92.68 | 94.54 | 95.74 | 96.37 | 97.60 | 98.70 | 98.74 | 98.97 | 98.92 | 99.20 | 99.13 | 99.18 | 98.95 | | | |
| Wtd Avg | 43.49 | 82.55 | 92.65 | 94.46 | 95.77 | 96.39 | 97.66 | 98.75 | 98.78 | 99.02 | 98.95 | 99.25 | 99.14 | 99.20 | 98.95 | | | |
| Selected | 43.90 | 82.77 | 92.66 | 94.50 | 95.76 | 97.01 | 97.63 | 98.09 | 98.55 | 99.01 | 99.21 | 99.41 | 99.61 | 99.80 | 99.85 | 99.90 | 99.95 | 100.00 |
| Incremental | 38.87 | 9.89 | 1.84 | 1.26 | 1.25 | 0.62 | 0.46 | 0.46 | 0.46 | 0.20 | 0.20 | 0.20 | 0.19 | 0.05 | 0.05 | 0.05 | 0.05 | |

**Private Passenger Automobile - Excluding Farmers/Voitures de tourisme - sauf exploitants agricoles**
**Paid Loss And Expense Amount ($000)/Montant de sinistres et de frais réglés ($000) Alberta/Alberta**
**Underinsured Motorist /Sous-assurance des tiers**
**as of December 31, 2018**

| | Developed Months | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accident Year | 012 | 024 | 036 | 048 | 060 | 072 | 084 | 096 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | PROJECTED ULT LOSS |
| 2004 | 14 | 43 | 115 | 664 | 2,632 | 2,904 | 3,108 | 3,140 | 4,359 | 4,585 | 4,603 | 4,792 | 4,796 | 5,056 | 5,059 | 5,138 |
| 2005 | 22 | 102 | 934 | 1,895 | 1,897 | 2,795 | 3,482 | 5,515 | 7,592 | 8,367 | 8,588 | 8,582 | 8,586 | 9,070 | | 9,070 |
| 2006 | 41 | 80 | 204 | 2,089 | 3,205 | 3,826 | 5,029 | 6,468 | 6,977 | 8,115 | 8,186 | 8,483 | 8,485 | | | 9,015 |
| 2007 | 9 | 142 | 581 | 1,070 | 1,446 | 2,727 | 3,285 | 3,369 | 3,936 | 4,023 | 5,278 | 5,671 | | | | 6,350 |
| 2008 | 17 | 52 | 125 | 442 | 1,287 | 1,477 | 2,948 | 5,179 | 5,380 | 5,557 | 5,620 | | | | | 5,757 |
| 2009 | 12 | 256 | 636 | 1,979 | 4,171 | 6,342 | 7,582 | 7,600 | 7,900 | 8,068 | | | | | | 8,162 |
| 2010 | 2 | 66 | 343 | 987 | 1,127 | 2,149 | 4,657 | 4,981 | 5,603 | | | | | | | 6,797 |
| 2011 | 7 | 65 | 298 | 639 | 1,982 | 2,289 | 5,206 | 5,337 | | | | | | | | 9,173 |
| 2012 | 14 | 147 | 1,025 | 2,456 | 3,798 | 5,807 | 6,796 | | | | | | | | | 11,082 |
| 2013 | 14 | 437 | 979 | 1,328 | 1,968 | 2,902 | | | | | | | | | | 6,441 |
| 2014 | 56 | 95 | 319 | 1,662 | 3,392 | | | | | | | | | | | 8,231 |
| 2015 | 14 | 68 | 591 | 3,382 | | | | | | | | | | | | 16,649 |
| 2016 | 27 | 1,192 | 2,615 | | | | | | | | | | | | | 15,920 |
| 2017 | 89 | 142 | | | | | | | | | | | | | | 13,319 |
| 2018 | 86 | | | | | | | | | | | | | | | 11,029 |

**Percentage of ultimate amount at the end of each development period**

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 | 0.27 | 0.84 | 2.24 | 12.92 | 51.22 | 56.52 | 60.49 | 61.11 | 84.84 | 89.23 | 89.59 | 93.26 | 93.34 | 98.40 | 98.46 | | | |
| 2005 | 0.24 | 1.12 | 10.30 | 20.89 | 20.92 | 30.82 | 38.39 | 60.81 | 83.71 | 92.25 | 94.69 | 94.62 | 94.67 | 100.00 | | | | |
| 2006 | 0.45 | 0.89 | 2.26 | 23.17 | 35.55 | 42.44 | 55.79 | 71.75 | 77.39 | 90.02 | 90.81 | 94.10 | 94.12 | | | | | |
| 2007 | 0.14 | 2.24 | 9.15 | 16.85 | 22.77 | 42.94 | 51.73 | 53.05 | 61.98 | 63.35 | 83.12 | 89.30 | | | | | | |
| 2008 | 0.30 | 0.90 | 2.17 | 7.68 | 22.35 | 25.65 | 51.20 | 89.95 | 93.45 | 96.52 | 97.61 | | | | | | | |
| 2009 | 0.15 | 3.14 | 7.79 | 24.25 | 51.10 | 77.70 | 92.89 | 93.11 | 96.78 | 98.84 | | | | | | | | |
| 2010 | 0.03 | 0.97 | 5.05 | 14.52 | 16.58 | 31.62 | 68.51 | 73.28 | 82.43 | | | | | | | | | |
| 2011 | 0.08 | 0.71 | 3.25 | 6.97 | 21.61 | 24.95 | 56.75 | 58.18 | | | | | | | | | | |
| 2012 | 0.13 | 1.33 | 9.25 | 22.16 | 34.27 | 52.40 | 61.33 | | | | | | | | | | | |
| 2013 | 0.22 | 6.78 | 15.20 | 20.62 | 30.55 | 45.06 | | | | | | | | | | | | |
| 2014 | 0.68 | 1.15 | 3.88 | 20.19 | 41.21 | | | | | | | | | | | | | |
| 2015 | 0.08 | 0.41 | 3.55 | 20.31 | | | | | | | | | | | | | | |
| 2016 | 0.17 | 7.49 | 16.43 | | | | | | | | | | | | | | | |
| 2017 | 0.67 | 1.07 | | | | | | | | | | | | | | | | |
| 2018 | 0.78 | | | | | | | | | | | | | | | | | |
| Avg | 0.29 | 2.07 | 6.96 | 17.54 | 31.65 | 43.01 | 59.68 | 70.16 | 82.94 | 88.37 | 91.16 | 92.82 | 94.04 | 99.20 | 98.46 | | | |
| Wtd Avg | 0.30 | 2.20 | 7.44 | 18.25 | 31.57 | 43.15 | 59.67 | 69.94 | 83.01 | 89.02 | 91.35 | 93.09 | 94.16 | 99.42 | 98.46 | | | |
| Selected | 0.30 | 2.14 | 7.20 | 17.90 | 31.61 | 45.64 | 59.67 | 71.33 | 82.99 | 88.70 | 91.27 | 93.46 | 95.64 | 97.82 | 100.00 | 100.00 | 100.00 | 100.00 |
| Incremental | 1.84 | 5.06 | 10.70 | 13.71 | 14.03 | 14.03 | 11.66 | 11.66 | 5.71 | 2.57 | 2.19 | 2.18 | 2.18 | 2.18 | 0.00 | 0.00 | 0.00 | |

**Private Passenger Automobile - Excluding Farmers/Voitures de tourisme - sauf exploitants agricoles**
**Paid Loss And Expense Amount ($000)/Montant de sinistres et de frais réglés ($000) Alberta/Alberta**
**Collision/Collision**
**as of December 31, 2018**

| | Developed Months | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accident Year | 012 | 024 | 036 | 048 | 060 | 072 | 084 | 096 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | PROJECTED ULT LOSS |
| 2004 | 176,193 | 187,650 | 185,991 | 185,797 | 185,723 | 185,730 | 185,697 | 185,606 | 185,571 | 185,544 | 185,528 | 185,524 | 185,490 | 185,477 | 185,471 | 185,472 |
| 2005 | 204,559 | 219,435 | 217,131 | 216,887 | 216,687 | 216,639 | 216,579 | 216,578 | 216,530 | 216,525 | 216,499 | 216,466 | 216,450 | 216,450 | | 216,458 |
| 2006 | 259,687 | 300,733 | 288,116 | 287,559 | 287,633 | 287,603 | 287,561 | 287,542 | 287,625 | 287,613 | 287,610 | 287,595 | 287,589 | | | 287,590 |
| 2007 | 333,876 | 378,532 | 355,365 | 354,549 | 354,529 | 354,445 | 354,362 | 354,321 | 354,281 | 354,236 | 354,218 | 354,188 | | | | 354,213 |
| 2008 | 367,663 | 388,473 | 376,950 | 376,839 | 376,814 | 376,927 | 377,054 | 376,896 | 376,817 | 376,816 | 376,790 | | | | | 376,798 |
| 2009 | 334,462 | 362,254 | 359,021 | 358,736 | 358,683 | 358,692 | 358,590 | 358,519 | 358,342 | 358,342 | | | | | | 358,349 |
| 2010 | 302,505 | 325,210 | 321,366 | 321,176 | 321,147 | 321,142 | 321,013 | 320,966 | 320,949 | | | | | | | 320,983 |
| 2011 | 358,066 | 360,057 | 355,045 | 354,953 | 354,893 | 354,809 | 354,773 | 354,728 | | | | | | | | 354,761 |
| 2012 | 344,416 | 378,065 | 369,707 | 369,401 | 369,326 | 369,249 | 369,197 | | | | | | | | | 369,301 |
| 2013 | 404,480 | 421,808 | 410,725 | 410,478 | 410,566 | 410,612 | | | | | | | | | | 410,796 |
| 2014 | 447,660 | 454,740 | 441,821 | 441,344 | 441,389 | | | | | | | | | | | 441,592 |
| 2015 | 477,076 | 459,625 | 450,019 | 449,805 | | | | | | | | | | | | 450,239 |
| 2016 | 469,526 | 461,831 | 453,100 | | | | | | | | | | | | | 453,084 |
| 2017 | 513,440 | 507,534 | | | | | | | | | | | | | | 496,103 |
| 2018 | 529,958 | | | | | | | | | | | | | | | 499,195 |

**Percentage of ultimate amount at the end of each development period**

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 | 95.00 | 101.17 | 100.28 | 100.18 | 100.14 | 100.14 | 100.12 | 100.07 | 100.05 | 100.04 | 100.03 | 100.03 | 100.01 | 100.00 | 100.00 | | | |
| 2005 | 94.50 | 101.38 | 100.31 | 100.20 | 100.11 | 100.08 | 100.06 | 100.06 | 100.03 | 100.03 | 100.02 | 100.00 | 100.00 | 100.00 | | | | |
| 2006 | 90.30 | 104.57 | 100.18 | 99.99 | 100.01 | 100.00 | 99.99 | 99.98 | 100.01 | 100.01 | 100.01 | 100.00 | 100.00 | | | | | |
| 2007 | 94.26 | 106.87 | 100.33 | 100.09 | 100.09 | 100.07 | 100.04 | 100.03 | 100.02 | 100.01 | 100.00 | 99.99 | | | | | | |
| 2008 | 97.58 | 103.10 | 100.04 | 100.01 | 100.00 | 100.03 | 100.07 | 100.03 | 100.01 | 100.00 | 100.00 | | | | | | | |
| 2009 | 93.33 | 101.09 | 100.19 | 100.11 | 100.09 | 100.10 | 100.07 | 100.05 | 100.00 | 100.00 | | | | | | | | |
| 2010 | 94.24 | 101.32 | 100.12 | 100.06 | 100.05 | 100.05 | 100.01 | 99.99 | 99.99 | | | | | | | | | |
| 2011 | 100.93 | 101.49 | 100.08 | 100.05 | 100.04 | 100.01 | 100.00 | 99.99 | | | | | | | | | | |
| 2012 | 93.26 | 102.37 | 100.11 | 100.03 | 100.01 | 99.99 | 99.97 | | | | | | | | | | | |
| 2013 | 98.46 | 102.68 | 99.98 | 99.92 | 99.94 | 99.96 | | | | | | | | | | | | |
| 2014 | 101.37 | 102.98 | 100.05 | 99.94 | 99.95 | | | | | | | | | | | | | |
| 2015 | 105.96 | 102.08 | 99.95 | 99.90 | | | | | | | | | | | | | | |
| 2016 | 103.63 | 101.93 | 100.00 | | | | | | | | | | | | | | | |
| 2017 | 103.49 | 102.30 | | | | | | | | | | | | | | | | |
| 2018 | 106.16 | | | | | | | | | | | | | | | | | |
| Avg | 98.17 | 102.52 | 100.13 | 100.04 | 100.04 | 100.04 | 100.04 | 100.03 | 100.02 | 100.01 | 100.01 | 100.01 | 100.00 | 100.00 | 100.00 | | | |
| Wtd Avg | 99.08 | 102.57 | 100.10 | 100.02 | 100.03 | 100.03 | 100.03 | 100.02 | 100.01 | 100.01 | 100.01 | 100.00 | 100.00 | 100.00 | 100.00 | | | |
| Selected | 98.62 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Incremental | 1.38 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |

**Private Passenger Automobile - Excluding Farmers/Voitures de tourisme - sauf exploitants agricoles Comprehensive/Accident sans collision ni versement**
**Paid Loss And Expense Amount ($000)/Montant de sinistres et de frais réglés ($000) Alberta/Alberta**
**Coverage Total/Toute l'experience**
**as of December 31, 2018**

| | Developed Months | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accident Year | 012 | 024 | 036 | 048 | 060 | 072 | 084 | 096 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | PROJECTED ULT LOSS |
| 2004 | 104,969 | 125,066 | 125,221 | 125,197 | 125,239 | 125,233 | 125,244 | 125,244 | 125,240 | 125,233 | 125,224 | 125,215 | 125,209 | 125,209 | 125,209 | 125,209 |
| 2005 | 119,582 | 153,362 | 153,721 | 153,733 | 153,751 | 153,747 | 153,717 | 153,703 | 153,701 | 153,692 | 153,684 | 153,666 | 153,663 | 153,661 | | 153,666 |
| 2006 | 118,389 | 156,862 | 157,102 | 157,154 | 157,172 | 157,185 | 157,169 | 157,177 | 157,182 | 157,180 | 157,172 | 157,174 | 157,173 | | | 157,173 |
| 2007 | 176,021 | 233,916 | 234,038 | 234,071 | 234,103 | 234,055 | 234,091 | 234,132 | 234,128 | 234,131 | 234,097 | 234,094 | | | | 234,099 |
| 2008 | 167,592 | 212,106 | 212,293 | 212,241 | 212,163 | 212,228 | 212,281 | 212,302 | 212,296 | 212,222 | 212,207 | | | | | 212,208 |
| 2009 | 187,323 | 227,165 | 227,356 | 227,360 | 227,254 | 227,218 | 227,199 | 227,185 | 227,185 | 227,178 | | | | | | 227,189 |
| 2010 | 292,650 | 368,817 | 369,292 | 369,412 | 369,460 | 369,488 | 369,448 | 369,433 | 369,423 | | | | | | | 369,452 |
| 2011 | 171,836 | 212,596 | 212,785 | 212,749 | 212,702 | 212,664 | 212,649 | 212,654 | | | | | | | | 212,655 |
| 2012 | 253,714 | 345,274 | 349,352 | 349,377 | 349,474 | 349,491 | 349,603 | | | | | | | | | 349,614 |
| 2013 | 275,362 | 339,032 | 342,379 | 342,630 | 342,745 | 342,748 | | | | | | | | | | 342,786 |
| 2014 | 302,915 | 393,802 | 397,738 | 397,871 | 397,859 | | | | | | | | | | | 397,963 |
| 2015 | 332,435 | 406,566 | 409,750 | 409,743 | | | | | | | | | | | | 410,093 |
| 2016 | 461,957 | 550,474 | 555,639 | | | | | | | | | | | | | 555,968 |
| 2017 | 310,664 | 374,663 | | | | | | | | | | | | | | 377,287 |
| 2018 | 316,202 | | | | | | | | | | | | | | | 383,066 |

**Percentage of ultimate amount at the end of each development period**

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 | 83.84 | 99.89 | 100.01 | 99.99 | 100.02 | 100.02 | 100.03 | 100.03 | 100.03 | 100.02 | 100.01 | 100.01 | 100.00 | 100.00 | 100.00 | | | |
| 2005 | 77.82 | 99.80 | 100.04 | 100.04 | 100.06 | 100.05 | 100.03 | 100.02 | 100.02 | 100.02 | 100.01 | 100.00 | 100.00 | 100.00 | | | | |
| 2006 | 75.32 | 99.80 | 99.95 | 99.99 | 100.00 | 100.01 | 100.00 | 100.00 | 100.01 | 100.00 | 100.00 | 100.00 | 100.00 | | | | | |
| 2007 | 75.19 | 99.92 | 99.97 | 99.99 | 100.00 | 99.98 | 100.00 | 100.01 | 100.01 | 100.01 | 100.00 | 100.00 | | | | | | |
| 2008 | 78.98 | 99.95 | 100.04 | 100.02 | 99.98 | 100.01 | 100.03 | 100.04 | 100.04 | 100.01 | 100.00 | | | | | | | |
| 2009 | 82.45 | 99.99 | 100.07 | 100.08 | 100.03 | 100.01 | 100.00 | 100.00 | 100.00 | 99.99 | | | | | | | | |
| 2010 | 79.21 | 99.83 | 99.96 | 99.99 | 100.00 | 100.01 | 100.00 | 99.99 | 99.99 | | | | | | | | | |
| 2011 | 80.80 | 99.97 | 100.06 | 100.04 | 100.02 | 100.00 | 100.00 | 100.00 | | | | | | | | | | |
| 2012 | 72.57 | 98.76 | 99.93 | 99.93 | 99.96 | 99.96 | 100.00 | | | | | | | | | | | |
| 2013 | 80.33 | 98.90 | 99.88 | 99.95 | 99.99 | 99.99 | | | | | | | | | | | | |
| 2014 | 76.12 | 98.95 | 99.94 | 99.98 | 99.97 | | | | | | | | | | | | | |
| 2015 | 81.06 | 99.14 | 99.92 | 99.91 | | | | | | | | | | | | | | |
| 2016 | 83.09 | 99.01 | 99.94 | | | | | | | | | | | | | | | |
| 2017 | 82.34 | 99.30 | | | | | | | | | | | | | | | | |
| 2018 | 82.55 | | | | | | | | | | | | | | | | | |
| Avg | 79.44 | 99.52 | 99.98 | 99.99 | 100.00 | 100.01 | 100.01 | 100.01 | 100.01 | 100.01 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | | | |
| Wtd Avg | 79.66 | 99.38 | 99.96 | 99.98 | 100.00 | 100.00 | 100.01 | 100.01 | 100.01 | 100.01 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | | | |
| Selected | 79.55 | 99.45 | 99.97 | 99.99 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Incremental | 19.90 | 0.52 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |

**Private Passenger Automobile - Excluding Farmers/Voitures de tourisme - sauf exploitants agricoles**
**Paid Loss And Expense Amount ($000)/Montant de sinistres et de frais réglés ($000) Alberta/Alberta**
**Specified Perils/Risques spécifiés**
**as of December 31, 2018**

| | Developed Months | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Accident Year** | **012** | **024** | **036** | **048** | **060** | **072** | **084** | **096** | **108** | **120** | **132** | **144** | **156** | **168** | **180** | **PROJECTED ULT LOSS** |
| 2004 | 598 | 608 | 607 | 607 | 607 | 607 | 607 | 607 | 607 | 607 | 607 | 607 | 607 | 607 | 607 | 607 |
| 2005 | 599 | 694 | 695 | 697 | 697 | 697 | 697 | 697 | 697 | 697 | 697 | 697 | 697 | 697 | | 697 |
| 2006 | 488 | 619 | 624 | 624 | 624 | 624 | 624 | 624 | 624 | 624 | 624 | 624 | 624 | | | 624 |
| 2007 | 566 | 695 | 695 | 703 | 707 | 707 | 707 | 707 | 707 | 707 | 707 | 707 | | | | 708 |
| 2008 | 376 | 476 | 478 | 478 | 479 | 479 | 479 | 479 | 479 | 479 | 479 | | | | | 479 |
| 2009 | 428 | 517 | 522 | 521 | 521 | 521 | 521 | 521 | 521 | 521 | | | | | | 521 |
| 2010 | 541 | 627 | 631 | 625 | 625 | 625 | 625 | 625 | 625 | | | | | | | 625 |
| 2011 | 469 | 539 | 539 | 542 | 541 | 541 | 541 | 542 | | | | | | | | 541 |
| 2012 | 703 | 854 | 860 | 859 | 859 | 861 | 862 | | | | | | | | | 862 |
| 2013 | 557 | 636 | 648 | 648 | 648 | 646 | | | | | | | | | | 646 |
| 2014 | 671 | 848 | 854 | 854 | 854 | | | | | | | | | | | 853 |
| 2015 | 671 | 773 | 786 | 787 | | | | | | | | | | | | 788 |
| 2016 | 895 | 1,063 | 1,066 | | | | | | | | | | | | | 1,066 |
| 2017 | 856 | 1,044 | | | | | | | | | | | | | | 1,051 |
| 2018 | 992 | | | | | | | | | | | | | | | 1,132 |

**Percentage of ultimate amount at the end of each development period**

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 | 98.55 | 100.20 | 100.03 | 100.03 | 100.03 | 100.03 | 100.03 | 100.03 | 100.03 | 100.03 | 100.03 | 100.03 | 100.03 | 100.03 | 100.03 | | | |
| 2005 | 85.98 | 99.62 | 99.76 | 100.05 | 100.05 | 100.05 | 100.05 | 100.05 | 100.05 | 100.05 | 100.05 | 100.05 | 100.05 | 100.05 | | | | |
| 2006 | 78.21 | 99.21 | 100.01 | 100.01 | 100.01 | 100.01 | 100.01 | 100.01 | 100.01 | 100.01 | 100.01 | 100.01 | 100.01 | | | | | |
| 2007 | 79.96 | 98.18 | 98.18 | 99.31 | 99.88 | 99.88 | 99.88 | 99.88 | 99.88 | 99.88 | 99.88 | 99.88 | | | | | | |
| 2008 | 78.56 | 99.45 | 99.87 | 99.87 | 100.08 | 100.08 | 100.08 | 100.08 | 100.08 | 100.08 | 100.08 | | | | | | | |
| 2009 | 82.13 | 99.20 | 100.16 | 99.97 | 99.97 | 99.97 | 99.97 | 99.97 | 99.97 | 99.97 | | | | | | | | |
| 2010 | 86.57 | 100.33 | 100.97 | 100.01 | 100.01 | 100.01 | 100.01 | 100.01 | 100.01 | | | | | | | | | |
| 2011 | 86.62 | 99.55 | 99.55 | 100.10 | 99.91 | 99.91 | 99.91 | 100.10 | | | | | | | | | | |
| 2012 | 81.58 | 99.10 | 99.80 | 99.68 | 99.68 | 99.92 | 100.03 | | | | | | | | | | | |
| 2013 | 86.23 | 98.46 | 100.32 | 100.32 | 100.32 | 100.01 | | | | | | | | | | | | |
| 2014 | 78.62 | 99.36 | 100.07 | 100.07 | 100.07 | | | | | | | | | | | | | |
| 2015 | 85.20 | 98.16 | 99.81 | 99.93 | | | | | | | | | | | | | | |
| 2016 | 83.98 | 99.75 | 100.03 | | | | | | | | | | | | | | | |
| 2017 | 81.43 | 99.32 | | | | | | | | | | | | | | | | |
| 2018 | 87.67 | | | | | | | | | | | | | | | | | |
| Avg | 84.09 | 99.28 | 99.89 | 99.95 | 100.00 | 99.99 | 100.00 | 100.02 | 100.00 | 100.00 | 100.01 | 99.99 | 100.03 | 100.04 | 100.03 | | | |
| Wtd Avg | 84.03 | 99.27 | 99.88 | 99.94 | 99.99 | 99.98 | 100.00 | 100.01 | 100.00 | 100.00 | 100.00 | 99.99 | 100.03 | 100.04 | 100.03 | | | |
| Selected | 84.06 | 99.27 | 99.88 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Incremental | 15.21 | 0.61 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |

**Private Passenger Automobile - Excluding Farmers/Voitures de tourisme - sauf exploitants agricoles**
**Paid Loss And Expense Amount ($000)/Montant de sinistres et de frais réglés ($000) Alberta/Alberta**
**All Perils/Tous risques**
**as of December 31, 2018**

| | Developed Months | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accident Year | 012 | 024 | 036 | 048 | 060 | 072 | 084 | 096 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | PROJECTED ULT LOSS |
| 2004 | 9,175 | 10,547 | 10,514 | 10,462 | 10,429 | 10,429 | 10,425 | 10,422 | 10,420 | 10,420 | 10,420 | 10,420 | 10,419 | 10,419 | 10,419 | 10,419 |
| 2005 | 8,802 | 10,128 | 10,040 | 10,039 | 10,042 | 10,045 | 10,044 | 10,040 | 10,035 | 10,032 | 10,028 | 10,026 | 10,023 | 10,021 | | 10,021 |
| 2006 | 7,175 | 9,160 | 9,063 | 9,056 | 9,039 | 9,044 | 9,042 | 9,042 | 9,042 | 9,042 | 9,041 | 9,041 | 9,041 | | | 9,041 |
| 2007 | 8,796 | 11,875 | 11,328 | 11,318 | 11,272 | 11,262 | 11,260 | 11,255 | 11,254 | 11,253 | 11,253 | 11,253 | | | | 11,253 |
| 2008 | 8,567 | 9,989 | 9,730 | 9,767 | 9,794 | 9,810 | 9,809 | 9,811 | 9,808 | 9,807 | 9,806 | | | | | 9,806 |
| 2009 | 8,442 | 9,297 | 9,223 | 9,232 | 9,307 | 8,904 | 8,886 | 8,885 | 8,883 | 8,882 | | | | | | 8,885 |
| 2010 | 8,123 | 9,703 | 9,643 | 9,658 | 9,662 | 9,619 | 9,616 | 9,614 | 9,613 | | | | | | | 9,613 |
| 2011 | 6,583 | 7,624 | 8,026 | 8,058 | 8,048 | 8,026 | 8,010 | 8,008 | | | | | | | | 8,010 |
| 2012 | 6,598 | 8,110 | 8,022 | 8,009 | 8,029 | 8,032 | 8,064 | | | | | | | | | 8,064 |
| 2013 | 8,112 | 9,441 | 9,284 | 9,296 | 9,321 | 9,327 | | | | | | | | | | 9,328 |
| 2014 | 7,890 | 9,057 | 9,481 | 9,562 | 9,563 | | | | | | | | | | | 9,567 |
| 2015 | 8,393 | 9,503 | 9,347 | 9,356 | | | | | | | | | | | | 9,367 |
| 2016 | 9,029 | 10,480 | 10,408 | | | | | | | | | | | | | 10,449 |
| 2017 | 8,267 | 8,906 | | | | | | | | | | | | | | 8,908 |
| 2018 | 8,462 | | | | | | | | | | | | | | | 9,606 |

**Percentage of ultimate amount at the end of each development period**

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 | 88.06 | 101.23 | 100.91 | 100.41 | 100.10 | 100.10 | 100.06 | 100.03 | 100.01 | 100.01 | 100.01 | 100.01 | 100.00 | 100.00 | 100.00 | | | |
| 2005 | 87.84 | 101.07 | 100.19 | 100.18 | 100.21 | 100.24 | 100.23 | 100.19 | 100.14 | 100.11 | 100.07 | 100.05 | 100.02 | 100.00 | | | | |
| 2006 | 79.36 | 101.31 | 100.24 | 100.16 | 99.97 | 100.03 | 100.01 | 100.01 | 100.01 | 100.01 | 100.00 | 100.00 | 100.00 | | | | | |
| 2007 | 78.17 | 105.53 | 100.67 | 100.58 | 100.17 | 100.08 | 100.06 | 100.02 | 100.01 | 100.00 | 100.00 | 100.00 | | | | | | |
| 2008 | 87.37 | 101.87 | 99.23 | 99.60 | 99.88 | 100.04 | 100.03 | 100.05 | 100.02 | 100.01 | 100.00 | | | | | | | |
| 2009 | 95.02 | 104.64 | 103.81 | 103.91 | 104.75 | 100.22 | 100.02 | 100.00 | 99.98 | 99.97 | | | | | | | | |
| 2010 | 84.50 | 100.93 | 100.31 | 100.46 | 100.51 | 100.06 | 100.03 | 100.01 | 100.00 | | | | | | | | | |
| 2011 | 82.19 | 95.19 | 100.21 | 100.60 | 100.48 | 100.21 | 100.01 | 99.98 | | | | | | | | | | |
| 2012 | 81.82 | 100.57 | 99.48 | 99.32 | 99.56 | 99.60 | 100.00 | | | | | | | | | | | |
| 2013 | 86.97 | 101.22 | 99.53 | 99.66 | 99.93 | 99.99 | | | | | | | | | | | | |
| 2014 | 82.47 | 94.67 | 99.10 | 99.95 | 99.96 | | | | | | | | | | | | | |
| 2015 | 89.60 | 101.45 | 99.79 | 99.88 | | | | | | | | | | | | | | |
| 2016 | 86.41 | 100.30 | 99.61 | | | | | | | | | | | | | | | |
| 2017 | 92.81 | 99.98 | | | | | | | | | | | | | | | | |
| 2018 | 88.09 | | | | | | | | | | | | | | | | | |
| Avg | 86.04 | 100.71 | 100.24 | 100.39 | 100.50 | 100.06 | 100.05 | 100.04 | 100.02 | 100.02 | 100.02 | 100.01 | 100.01 | 100.00 | 100.00 | | | |
| Wtd Avg | 86.00 | 100.82 | 100.23 | 100.39 | 100.48 | 100.06 | 100.05 | 100.04 | 100.02 | 100.02 | 100.02 | 100.01 | 100.01 | 100.00 | 100.00 | | | |
| Selected | 86.02 | 99.00 | 99.25 | 99.50 | 99.75 | 99.88 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Incremental | 12.98 | 0.25 | 0.25 | 0.25 | 0.13 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |

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# APPENDIX 5.7

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AIRB Approved Rate Changes

**Automobile Insurance Rate Board Filings**

Table below from AIRB Filing Decisions

| Period | Ending rate change | |
|---|---|---|
| | Basic | Alternative/ Additional |
| 2018 | 6.30% | 2.24% |
| 2019 | 14.47% | 3.89% |
| March 2020 | 7.25% | 3.71% |

| Description | Average Premium Rate level in 2018 | Ending Rate Change in 2018 | On Level Factor | Rate Adjustments to March 2020 |
|---|---|---|---|---|
| Basic | 3.57% | 6.30% | 2.63% | 26.01% |
| Alternative/ Additional | 1.68% | 2.24% | 0.55% | 8.33% |

| Insurer Name | 2018 Approved Rate Change | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Basic | Renewal | Basic | Renewal | Basic | Renewal | Basic | Renewal |
| Alberta Motor Association Insurance Company | **0.00%** | 1-Jun-18 | **3.10%** | 1-Sep-18 | | | | |
| Allstate Insurance Company of Canada | **6.40%** | 15-Feb-18 | | | | | | |
| Aviva General Insurance Company | **6.00%** | 1-May-18 | | | | | | |
| Aviva Insurance Company of Canada | **2.10%** | 1-Jul-18 | | | | | | |
| Belair Insurance Company Inc. | **1.50%** | 31-Mar-18 | **3.30%** | 21-Jun-18 | **0.30%** | 2-Feb-19 | **6.10%** | 6-Feb-19 |
| Certas Direct Insurance Company | **7.10%** | 3-Apr-18 | | | | | | |
| Certas Home and Auto Insurance Company | **3.40%** | 27-Mar-18 | **3.90%** | 3-Nov-18 | | | | |
| Chubb Insurance Company of Canada | | | | | | | | |
| Continental Casualty Company | **3.20%** | 1-Jun-18 | | | | | | |
| Co-operators General Insurance Company | **5.90%** | 18-Jan-19 | | | | | | |
| COSECO Insurance Company | **4.40%** | 1-Jun-18 | | | | | | |
| CUMIS General Insurance Company | | | | | | | | |
| Economical Mutual Insurance Company | **8.40%** | 2-Nov-18 | | | | | | |
| Facility Association | **4.50%** | 1-Mar-18 | **0.00%** | 1-Oct-18 | | | | |
| Federated Insurance Company of Canada | **0.00%** | 1-Sep-18 | **0.00%** | 15-Nov-18 | | | | |
| Hartford Fire Insurance Company | | | | | | | | |
| Intact Insurance Company | **0.70%** | 30-Jan-18 | **3.60%** | 11-May-18 | **-0.20%** | 13-Jul-18 | **-1.60%** | 17-Aug-18 |
| Millennium Insurance Corporation | **26.70%** | 1-Sep-18 | | | | | | |
| Northbridge Personal Insurance Corporation | | | | | | | | |
| Northbridge General Insurance Corporation | **0.00%** | 15-Nov-18 | | | | | | |
| Novex Insurance Company | **0.30%** | 30-Jan-18 | **5.80%** | 11-May-18 | **-0.20%** | 13-Jul-18 | **-1.00%** | 17-Aug-18 |
| Optimum West Insurance Company | **6.80%** | 1-Aug-18 | | | | | | |
| Peace Hills General Insurance Company | **9.30%** | 1-Feb-18 | | | | | | |
| Pembridge Insurance Company | **6.00%** | 15-Apr-18 | | | | | | |
| Primmum Insurance Company | **2.20%** | 1-Jan-18 | **9.90%** | 28-Sep-18 | | | | |
| Royal & Sun Alliance Insurance Company of Canada | **7.40%** | 1-Mar-18 | | | | | | |
| Security National Insurance Company | **2.80%** | 1-Jan-18 | **10.00%** | 28-Sep-18 | | | | |
| SGI Canada Insurance Services Limited | **5.40%** | 15-Feb-18 | **0.00%** | 15-Dec-18 | | | | |
| Sonnet Insurance Company | **0.00%** | 23-Dec-18 | | | | | | |
| TD Home and Auto Insurance Company | **3.00%** | 1-Jan-18 | **10.00%** | 28-Sep-18 | | | | |
| The Dominion of Canada General Insurance Company | **5.00%** | 1-Apr-18 | **4.60%** | 15-Aug-18 | | | | |
| The Personal Insurance Company | **8.60%** | 3-Apr-18 | | | | | | |
| The Portage la Prairie Mutual Insurance Company | **5.50%** | 1-Oct-18 | | | | | | |
| The Wawanesa Mutual Insurance Company | **10.70%** | 1-May-18 | | | | | | |
| Tokio Marine & Nichido Fire Insurance Co. Ltd. | **0.00%** | 15-Nov-18 | | | | | | |
| Traders General Insurance Company | **2.90%** | 1-Jul-18 | | | | | | |
| Unifund Assurance Company | | | | | | | | |
| Zenith Insurance Company | **0.00%** | 15-Nov-18 | | | | | | |
| Zurich Insurance Company Ltd. | **0.10%** | 15-Dec-18 | | | | | | |
| Other Companies | | | | | | | | |

| Insurer Name | 2019 & 2020 Approved Rate Change | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Basic | Renewal | Basic | Renewal | Basic | Renewal | Basic | Renewal |
| Alberta Motor Association Insurance Company | **5.90%** | 1-Sep-19 | | | | | | |
| Allstate Insurance Company of Canada | **-0.80%** | 28-Feb-19 | **6.30%** | 1-Mar-19 | **8.80%** | 5-Dec-19 | **4.27%** | 1-Mar-20 |
| Aviva General Insurance Company | **12.50%** | 15-Jan-19 | **16.00%** | 1-Jan-20 | | | | |
| Aviva Insurance Company of Canada | **6.10%** | 1-Apr-19 | **15.29%** | 1-Jan-20 | | | | |
| Belair Insurance Company Inc. | **0.40%** | 15-May-19 | **0.60%** | 25-Sep-19 | **14.20%** | 16-Jan-20 | | |
| Certas Direct Insurance Company | **7.30%** | 16-Apr-19 | **29.80%** | 17-Dec-19 | | | | |
| Certas Home and Auto Insurance Company | **6.30%** | 2-Apr-19 | **17.70%** | 28-Jan-20 | | | | |
| Chubb Insurance Company of Canada | **20.37%** | 1-May-20 | | | | | | |
| Continental Casualty Company | **33.80%** | 1-Jan-20 | | | | | | |
| Co-operators General Insurance Company | **5.00%** | 15-Feb-19 | **12.80%** | 10-Jan-20 | **0.00%** | 20-Mar-20 | | |
| COSECO Insurance Company | **7.80%** | 1-Jun-19 | **18.20%** | 1-Jan-20 | **5.98%** | 22-Jun-20 | | |
| CUMIS General Insurance Company | **0.80%** | 1-Aug-19 | | | | | | |
| Economical Mutual Insurance Company | **7.00%** | 1-Apr-19 | **21.50%** | 31-Dec-19 | | | | |
| Facility Association | **0.00%** | 1-Nov-19 | | | | | | |
| Federated Insurance Company of Canada | **0.00%** | 28-Jul-19 | | | | | | |
| Hartford Fire Insurance Company | **10.70%** | 1-Apr-19 | **11.30%** | 1-Apr-19 | | | | |
| Intact Insurance Company | **6.10%** | 15-Jan-19 | **0.00%** | 7-Sep-19 | **4.90%** | 22-Nov-19 | **0.00%** | 1-May-20 |
| Millennium Insurance Corporation | **7.90%** | 1-Nov-19 | | | | | | |
| Northbridge Personal Insurance Corporation | | | | | | | | |
| Northbridge General Insurance Corporation | **0.00%** | 28-Jul-19 | | | | | | |
| Novex Insurance Company | **6.40%** | 15-Jan-19 | **6.60%** | 22-Nov-19 | | | | |
| Optimum West Insurance Company | **6.80%** | 1-Feb-19 | **24.90%** | 15-Nov-19 | | | | |
| Peace Hills General Insurance Company | **3.00%** | 1-Apr-19 | **27.90%** | 15-Dec-19 | | | | |
| Pembridge Insurance Company | **-1.80%** | 21-Jan-19 | **5.10%** | 28-May-19 | **10.10%** | 8-Dec-19 | **0.01%** | 28-May-20 |
| Primmum Insurance Company | **6.40%** | 1-Mar-19 | **12.90%** | 1-Jan-20 | | | | |
| Royal & Sun Alliance Insurance Company of Canada | **5.80%** | 1-Apr-19 | **7.20%** | 1-Jan-20 | **6.79%** | 15-Apr-20 | | |
| Security National Insurance Company | **6.40%** | 1-Mar-19 | **14.00%** | 1-Jan-20 | | | | |
| SGI Canada Insurance Services Limited | **18.90%** | 15-Feb-19 | **13.20%** | 1-Dec-19 | **4.34%** | 15-Feb-20 | | |
| Sonnet Insurance Company | **4.20%** | 1-Apr-19 | **-0.10%** | 5-Nov-19 | **15.60%** | 8-Dec-19 | **0.00%** | 31-Dec-19 |
| TD Home and Auto Insurance Company | **6.90%** | 1-Mar-19 | **17.30%** | 1-Jan-20 | | | | |
| The Dominion of Canada General Insurance Company | **7.00%** | 1-Apr-19 | **18.20%** | 1-Jan-20 | | | | |
| The Personal Insurance Company | **8.60%** | 2-Apr-19 | **23.60%** | 28-Jan-20 | | | | |
| The Portage la Prairie Mutual Insurance Company | **23.50%** | 1-Feb-20 | | | | | | |
| The Wawanesa Mutual Insurance Company | **8.90%** | 1-Apr-19 | **20.80%** | 15-Dec-19 | | | | |
| Tokio Marine & Nichido Fire Insurance Co. Ltd. | **0.00%** | 28-Jul-19 | | | | | | |
| Traders General Insurance Company | **7.20%** | 1-Apr-19 | **18.79%** | 1-Jan-20 | | | | |
| Unifund Assurance Company | **6.50%** | 1-Feb-19 | **7.80%** | 1-Jun-19 | **18.00%** | 1-Dec-19 | | |
| Zenith Insurance Company | **0.00%** | 28-Jul-19 | | | | | | |
| Zurich Insurance Company Ltd. | **0.10%** | 31-Dec-19 | | | | | | |
| Other Companies | | | | | | | | |

| Insurer Name | Average Premium Rate Level in 2018 | Ending Rate in 2018 | Ending Rate in 2019 | Ending Rate in 2020 (March 31, 2020) | Market Share | | |
|---|---|---|---|---|---|---|---|
| | | | | | Q3 2018 to Q2 2019 | Q3 2019 to Q1 2020 | Selected (Average) |
| Alberta Motor Association Insurance Company | 1.010 | 1.031 | 1.059 | 1.000 | 5.80% | 5.07% | 5.44% |
| Allstate Insurance Company of Canada | 1.056 | 1.064 | 1.147 | 1.043 | 2.77% | 3.20% | 2.99% |
| Aviva General Insurance Company | 1.040 | 1.060 | 1.125 | 1.160 | 1.69% | 1.69% | 1.69% |
| Aviva Insurance Company of Canada | 1.011 | 1.021 | 1.061 | 1.153 | 6.78% | 6.28% | 6.53% |
| Belair Insurance Company Inc. | 1.029 | 1.048 | 1.075 | 1.142 | 2.17% | 1.99% | 2.08% |
| Certas Direct Insurance Company | 1.053 | 1.071 | 1.393 | 1.000 | 0.64% | 0.66% | 0.65% |
| Certas Home and Auto Insurance Company | 1.033 | 1.074 | 1.063 | 1.177 | 4.05% | 4.39% | 4.22% |
| Chubb Insurance Company of Canada | 1.000 | 1.000 | 1.000 | 1.000 | 0.00% | 0.00% | 0.00% |
| Continental Casualty Company | 1.019 | 1.032 | 1.000 | 1.338 | 0.00% | 0.00% | 0.00% |
| Co-operators General Insurance Company | 1.000 | 1.000 | 1.112 | 1.128 | 6.86% | 7.26% | 7.06% |
| COSECO Insurance Company | 1.026 | 1.044 | 1.078 | 1.182 | 0.76% | 0.83% | 0.80% |
| CUMIS General Insurance Company | 1.000 | 1.000 | 1.008 | 1.000 | 0.16% | 0.16% | 0.16% |
| Economical Mutual Insurance Company | 1.014 | 1.084 | 1.300 | 1.000 | 2.54% | 2.87% | 2.71% |
| Facility Association | 1.038 | 1.045 | 1.000 | 1.000 | 0.21% | 0.22% | 0.22% |
| Federated Insurance Company of Canada | 1.000 | 1.000 | 1.000 | 1.000 | 0.10% | 0.10% | 0.10% |
| Hartford Fire Insurance Company | 1.000 | 1.000 | 1.110 | 1.000 | 0.00% | 0.00% | 0.00% |
| Intact Insurance Company | 1.023 | 1.025 | 1.113 | 1.000 | 17.09% | 14.89% | 15.99% |
| Millennium Insurance Corporation | 1.089 | 1.267 | 1.079 | 1.000 | 0.54% | 0.55% | 0.55% |
| Northbridge Personal Insurance Corporation | 1.000 | 1.000 | 1.000 | 1.000 | 0.01% | 0.01% | 0.01% |
| Northbridge General Insurance Corporation | 1.000 | 1.000 | 1.000 | 1.000 | 0.04% | 0.04% | 0.04% |
| Novex Insurance Company | 1.035 | 1.048 | 1.134 | 1.000 | 2.15% | 1.95% | 2.05% |
| Optimum West Insurance Company | 1.029 | 1.068 | 1.334 | 1.000 | 0.11% | 0.17% | 0.14% |
| Peace Hills General Insurance Company | 1.085 | 1.093 | 1.317 | 1.000 | 1.45% | 1.54% | 1.50% |
| Pembridge Insurance Company | 1.043 | 1.060 | 1.136 | 1.000 | 0.43% | 0.73% | 0.58% |
| Primmum Insurance Company | 1.048 | 1.123 | 1.064 | 1.129 | 3.83% | 4.16% | 4.00% |
| Royal & Sun Alliance Insurance Company of Canada | 1.062 | 1.074 | 1.058 | 1.072 | 0.90% | 1.01% | 0.96% |
| Security National Insurance Company | 1.055 | 1.131 | 1.064 | 1.140 | 11.41% | 11.53% | 11.47% |
| SGI Canada Insurance Services Limited | 1.047 | 1.054 | 1.346 | 1.043 | 1.65% | 2.00% | 1.83% |
| Sonnet Insurance Company | 1.000 | 1.000 | 1.203 | 1.000 | 0.23% | 0.44% | 0.34% |
| TD Home and Auto Insurance Company | 1.057 | 1.133 | 1.069 | 1.173 | 0.34% | 0.30% | 0.32% |
| The Dominion of Canada General Insurance Company | 1.056 | 1.098 | 1.070 | 1.182 | 1.76% | 2.09% | 1.93% |
| The Personal Insurance Company | 1.064 | 1.086 | 1.086 | 1.236 | 3.09% | 2.76% | 2.93% |
| The Portage la Prairie Mutual Insurance Company | 1.014 | 1.055 | 1.000 | 1.235 | 0.47% | 0.48% | 0.48% |
| The Wawanesa Mutual Insurance Company | 1.072 | 1.107 | 1.316 | 1.000 | 12.91% | 13.80% | 13.36% |
| Tokio Marine & Nichido Fire Insurance Co. Ltd. | 1.000 | 1.000 | 1.000 | 1.000 | 0.01% | 0.01% | 0.01% |
| Traders General Insurance Company | 1.015 | 1.029 | 1.072 | 1.188 | 1.50% | 1.58% | 1.54% |
| Unifund Assurance Company | 1.000 | 1.000 | 1.355 | 1.000 | 4.41% | 4.36% | 4.39% |
| Zenith Insurance Company | 1.000 | 1.000 | 1.000 | 1.000 | 0.04% | 0.04% | 0.04% |
| Zurich Insurance Company Ltd. | 1.000 | 1.001 | 1.001 | 1.000 | 0.00% | 0.00% | 0.00% |
| Other Companies | 1.000 | 1.000 | 1.000 | 1.000 | | | 0.97% |
| | | | | | **98.90%** | **99.16%** | **99.03%** |
| | **1.0357** | **1.0630** | **1.1447** | **1.0725** | | | 100.00% |

| Insurer Name | 2018 Approved Rate Change | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Alternative | Renewal | Alternative | Renewal | Alternative | Renewal | Alternative | Renewal |
| Alberta Motor Association Insurance Company | **-0.20%** | 1-Jun-18 | **2.80%** | 1-Sep-18 | | | | |
| Allstate Insurance Company of Canada | **2.80%** | 15-Feb-18 | | | | | | |
| Aviva General Insurance Company | **3.60%** | 1-May-18 | | | | | | |
| Aviva Insurance Company of Canada | **6.60%** | 1-Jul-18 | | | | | | |
| Belair Insurance Company Inc. | **1.50%** | 31-Mar-18 | **3.90%** | 21-Jun-18 | **-0.60%** | 2-Feb-19 | **2.10%** | 6-Feb-19 |
| Certas Direct Insurance Company | **0.00%** | 3-Apr-18 | | | | | | |
| Certas Home and Auto Insurance Company | **0.00%** | 27-Mar-18 | **0.00%** | 3-Nov-18 | | | | |
| Chubb Insurance Company of Canada | | | | | | | | |
| Continental Casualty Company | **2.80%** | 1-Jun-18 | | | | | | |
| Co-operators General Insurance Company | **3.70%** | 18-Jan-19 | | | | | | |
| COSECO Insurance Company | **5.80%** | 1-Jun-18 | | | | | | |
| CUMIS General Insurance Company | | | | | | | | |
| Economical Mutual Insurance Company | **0.70%** | 2-Nov-18 | | | | | | |
| Facility Association | **6.00%** | 1-Mar-18 | **0.80%** | 1-Oct-18 | | | | |
| Federated Insurance Company of Canada | **0.40%** | 1-Sep-18 | **1.10%** | 15-Nov-18 | | | | |
| Hartford Fire Insurance Company | | | | | | | | |
| Intact Insurance Company | **1.50%** | 30-Jan-18 | **4.50%** | 11-May-18 | **-0.30%** | 13-Jul-18 | **3.20%** | 17-Aug-18 |
| Millennium Insurance Corporation | **-25.90%** | 1-Sep-18 | | | | | | |
| Northbridge Personal Insurance Corporation | | | | | | | | |
| Northbridge General Insurance Corporation | **1.20%** | 15-Nov-18 | | | | | | |
| Novex Insurance Company | **1.60%** | 30-Jan-18 | **1.60%** | 11-May-18 | **-0.30%** | 13-Jul-18 | **1.90%** | 17-Aug-18 |
| Optimum West Insurance Company | **2.60%** | 1-Aug-18 | | | | | | |
| Peace Hills General Insurance Company | **-0.70%** | 1-Feb-18 | | | | | | |
| Pembridge Insurance Company | **6.10%** | 15-Apr-18 | | | | | | |
| Primmum Insurance Company | **3.80%** | 1-Jan-18 | **-4.20%** | 28-Sep-18 | | | | |
| Royal & Sun Alliance Insurance Company of Canada | **3.90%** | 1-Mar-18 | | | | | | |
| Security National Insurance Company | **2.60%** | 1-Jan-18 | **-2.10%** | 28-Sep-18 | | | | |
| SGI Canada Insurance Services Limited | **4.50%** | 15-Feb-18 | **-3.10%** | 15-Dec-18 | | | | |
| Sonnet Insurance Company | **1.00%** | 23-Dec-18 | | | | | | |
| TD Home and Auto Insurance Company | **2.90%** | 1-Jan-18 | **-2.00%** | 28-Sep-18 | | | | |
| The Dominion of Canada General Insurance Company | **-0.50%** | 1-Apr-18 | **0.30%** | 15-Aug-18 | | | | |
| The Personal Insurance Company | **0.00%** | 3-Apr-18 | | | | | | |
| The Portage la Prairie Mutual Insurance Company | **0.00%** | 1-Oct-18 | | | | | | |
| The Wawanesa Mutual Insurance Company | **-1.90%** | 1-May-18 | | | | | | |
| Tokio Marine & Nichido Fire Insurance Co. Ltd. | **1.20%** | 15-Nov-18 | | | | | | |
| Traders General Insurance Company | **2.80%** | 1-Jul-18 | | | | | | |
| Unifund Assurance Company | | | | | | | | |
| Zenith Insurance Company | **-0.60%** | 15-Nov-18 | | | | | | |
| Zurich Insurance Company Ltd. | **-2.50%** | 15-Dec-18 | | | | | | |
| Other Companies | | | | | | | | |

| Insurer Name | 2019 & 2020 Approved Rate Change | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Alternative | Renewal | Alternative | Renewal | Alternative | Renewal | Alternative | Renewal |
| Alberta Motor Association Insurance Company | **1.90%** | 1-Sep-19 | | | | | | |
| Allstate Insurance Company of Canada | **1.20%** | 28-Feb-19 | **2.90%** | 1-Mar-19 | **11.90%** | 5-Dec-19 | **5.42%** | 1-Mar-20 |
| Aviva General Insurance Company | **-5.30%** | 15-Jan-19 | **13.50%** | 1-Jan-20 | | | | |
| Aviva Insurance Company of Canada | **3.60%** | 1-Apr-19 | **14.65%** | 1-Jan-20 | | | | |
| Belair Insurance Company Inc. | **0.00%** | 15-May-19 | **-1.10%** | 25-Sep-19 | **1.60%** | 16-Jan-20 | | |
| Certas Direct Insurance Company | **0.00%** | 16-Apr-19 | **-0.20%** | 17-Dec-19 | | | | |
| Certas Home and Auto Insurance Company | **2.20%** | 2-Apr-19 | **8.50%** | 28-Jan-20 | | | | |
| Chubb Insurance Company of Canada | **1.99%** | 1-May-20 | | | | | | |
| Continental Casualty Company | **9.14%** | 1-Jan-20 | | | | | | |
| Co-operators General Insurance Company | **5.00%** | 15-Feb-19 | **10.70%** | 10-Jan-20 | **0.10%** | 20-Mar-20 | | |
| COSECO Insurance Company | **2.10%** | 1-Jun-19 | **2.40%** | 1-Jan-20 | **-7.38%** | 22-Jun-20 | | |
| CUMIS General Insurance Company | **8.70%** | 1-Aug-19 | | | | | | |
| Economical Mutual Insurance Company | **2.40%** | 1-Apr-19 | **5.40%** | 31-Dec-19 | | | | |
| Facility Association | **1.40%** | 1-Nov-19 | | | | | | |
| Federated Insurance Company of Canada | **1.00%** | 28-Jul-19 | | | | | | |
| Hartford Fire Insurance Company | **-3.90%** | 1-Apr-19 | **-3.30%** | 1-Apr-19 | | | | |
| Intact Insurance Company | **3.20%** | 15-Jan-19 | **0.10%** | 7-Sep-19 | **2.60%** | 22-Nov-19 | **0.90%** | 1-May-20 |
| Millennium Insurance Corporation | **0.00%** | 1-Nov-19 | | | | | | |
| Northbridge Personal Insurance Corporation | | | | | | | | |
| Northbridge General Insurance Corporation | **1.00%** | 28-Jul-19 | | | | | | |
| Novex Insurance Company | **3.10%** | 15-Jan-19 | **2.30%** | 22-Nov-19 | | | | |
| Optimum West Insurance Company | **2.30%** | 1-Feb-19 | **13.20%** | 15-Nov-19 | | | | |
| Peace Hills General Insurance Company | **7.50%** | 1-Apr-19 | **8.50%** | 15-Dec-19 | | | | |
| Pembridge Insurance Company | **0.11%** | 21-Jan-19 | **4.90%** | 28-May-19 | **9.80%** | 8-Dec-19 | **-0.01%** | 28-May-20 |
| Primmum Insurance Company | **1.70%** | 1-Mar-19 | **3.70%** | 1-Jan-20 | | | | |
| Royal & Sun Alliance Insurance Company of Canada | **4.00%** | 1-Apr-19 | **2.50%** | 1-Jan-20 | **2.80%** | 15-Apr-20 | | |
| Security National Insurance Company | **2.50%** | 1-Mar-19 | **3.70%** | 1-Jan-20 | | | | |
| SGI Canada Insurance Services Limited | **-15.50%** | 15-Feb-19 | **18.60%** | 1-Dec-19 | **5.88%** | 15-Feb-20 | | |
| Sonnet Insurance Company | **6.70%** | 1-Apr-19 | **0.00%** | 5-Nov-19 | **28.20%** | 8-Dec-19 | **0.40%** | 31-Dec-19 |
| TD Home and Auto Insurance Company | **2.20%** | 1-Mar-19 | **-0.80%** | 1-Jan-20 | | | | |
| The Dominion of Canada General Insurance Company | **2.40%** | 1-Apr-19 | **10.70%** | 1-Jan-20 | | | | |
| The Personal Insurance Company | **0.30%** | 2-Apr-19 | **2.90%** | 28-Jan-20 | | | | |
| The Portage la Prairie Mutual Insurance Company | **12.50%** | 1-Feb-20 | | | | | | |
| The Wawanesa Mutual Insurance Company | **0.00%** | 1-Apr-19 | **0.00%** | 15-Dec-19 | | | | |
| Tokio Marine & Nichido Fire Insurance Co. Ltd. | **-2.30%** | 28-Jul-19 | | | | | | |
| Traders General Insurance Company | **2.60%** | 1-Apr-19 | **8.94%** | 1-Jan-20 | | | | |
| Unifund Assurance Company | **3.50%** | 1-Feb-19 | **1.60%** | 1-Jun-19 | **-2.40%** | 1-Dec-19 | | |
| Zenith Insurance Company | **-1.40%** | 28-Jul-19 | | | | | | |
| Zurich Insurance Company Ltd. | **-2.20%** | 31-Dec-19 | | | | | | |
| Other Companies | | | | | | | | |

| Insurer Name | Average Premium Rate Level in 2018 | Ending Rate in 2018 | Ending Rate in 2019 | Ending Rate in 2020 (March 31, 2020) | Market Share | | |
|---|---|---|---|---|---|---|---|
| | | | | | Q3 2018 to Q2 2019 | Q3 2019 to Q1 2020 | Selected (Average) |
| Alberta Motor Association Insurance Company | 1.008 | 1.026 | 1.019 | 1.000 | 5.80% | 5.07% | 5.44% |
| Allstate Insurance Company of Canada | 1.025 | 1.028 | 1.165 | 1.054 | 2.77% | 3.20% | 2.99% |
| Aviva General Insurance Company | 1.024 | 1.036 | 0.947 | 1.135 | 1.69% | 1.69% | 1.69% |
| Aviva Insurance Company of Canada | 1.033 | 1.066 | 1.036 | 1.147 | 6.78% | 6.28% | 6.53% |
| Belair Insurance Company Inc. | 1.032 | 1.055 | 1.004 | 1.016 | 2.17% | 1.99% | 2.08% |
| Certas Direct Insurance Company | 1.000 | 1.000 | 0.998 | 1.000 | 0.64% | 0.66% | 0.65% |
| Certas Home and Auto Insurance Company | 1.000 | 1.000 | 1.022 | 1.085 | 4.05% | 4.39% | 4.22% |
| Chubb Insurance Company of Canada | 1.000 | 1.000 | 1.000 | 1.000 | 0.00% | 0.00% | 0.00% |
| Continental Casualty Company | 1.016 | 1.028 | 1.000 | 1.091 | 0.00% | 0.00% | 0.00% |
| Co-operators General Insurance Company | 1.000 | 1.000 | 1.089 | 1.108 | 6.86% | 7.26% | 7.06% |
| COSECO Insurance Company | 1.034 | 1.058 | 1.021 | 1.024 | 0.76% | 0.83% | 0.80% |
| CUMIS General Insurance Company | 1.000 | 1.000 | 1.087 | 1.000 | 0.16% | 0.16% | 0.16% |
| Economical Mutual Insurance Company | 1.001 | 1.007 | 1.079 | 1.000 | 2.54% | 2.87% | 2.71% |
| Facility Association | 1.052 | 1.068 | 1.014 | 1.000 | 0.21% | 0.22% | 0.22% |
| Federated Insurance Company of Canada | 1.003 | 1.015 | 1.010 | 1.000 | 0.10% | 0.10% | 0.10% |
| Hartford Fire Insurance Company | 1.000 | 1.000 | 0.964 | 1.000 | 0.00% | 0.00% | 0.00% |
| Intact Insurance Company | 1.054 | 1.091 | 1.060 | 1.000 | 17.09% | 14.89% | 15.99% |
| Millennium Insurance Corporation | 0.913 | 0.741 | 1.000 | 1.000 | 0.54% | 0.55% | 0.55% |
| Northbridge Personal Insurance Corporation | 1.000 | 1.000 | 1.000 | 1.000 | 0.01% | 0.01% | 0.01% |
| Northbridge General Insurance Corporation | 1.002 | 1.012 | 1.010 | 1.000 | 0.04% | 0.04% | 0.04% |
| Novex Insurance Company | 1.031 | 1.049 | 1.055 | 1.000 | 2.15% | 1.95% | 2.05% |
| Optimum West Insurance Company | 1.011 | 1.026 | 1.158 | 1.000 | 0.11% | 0.17% | 0.14% |
| Peace Hills General Insurance Company | 0.994 | 0.993 | 1.166 | 1.000 | 1.45% | 1.54% | 1.50% |
| Pembridge Insurance Company | 1.044 | 1.061 | 1.153 | 1.000 | 0.43% | 0.73% | 0.58% |
| Primmum Insurance Company | 1.027 | 0.994 | 1.017 | 1.037 | 3.83% | 4.16% | 4.00% |
| Royal & Sun Alliance Insurance Company of Canada | 1.033 | 1.039 | 1.040 | 1.025 | 0.90% | 1.01% | 0.96% |
| Security National Insurance Company | 1.020 | 1.004 | 1.025 | 1.037 | 11.41% | 11.53% | 11.47% |
| SGI Canada Insurance Services Limited | 1.038 | 1.013 | 1.002 | 1.059 | 1.65% | 2.00% | 1.83% |
| Sonnet Insurance Company | 1.000 | 1.010 | 1.373 | 1.000 | 0.23% | 0.44% | 0.34% |
| TD Home and Auto Insurance Company | 1.024 | 1.008 | 1.022 | 0.992 | 0.34% | 0.30% | 0.32% |
| The Dominion of Canada General Insurance Company | 0.997 | 0.998 | 1.024 | 1.107 | 1.76% | 2.09% | 1.93% |
| The Personal Insurance Company | 1.000 | 1.000 | 1.003 | 1.029 | 3.09% | 2.76% | 2.93% |
| The Portage la Prairie Mutual Insurance Company | 1.000 | 1.000 | 1.000 | 1.125 | 0.47% | 0.48% | 0.48% |
| The Wawanesa Mutual Insurance Company | 0.987 | 0.981 | 1.000 | 1.000 | 12.91% | 13.80% | 13.36% |
| Tokio Marine & Nichido Fire Insurance Co. Ltd. | 1.002 | 1.012 | 0.977 | 1.000 | 0.01% | 0.01% | 0.01% |
| Traders General Insurance Company | 1.014 | 1.028 | 1.026 | 1.089 | 1.50% | 1.58% | 1.54% |
| Unifund Assurance Company | 1.000 | 1.000 | 1.026 | 1.000 | 4.41% | 4.36% | 4.39% |
| Zenith Insurance Company | 0.999 | 0.994 | 0.986 | 1.000 | 0.04% | 0.04% | 0.04% |
| Zurich Insurance Company Ltd. | 0.999 | 0.975 | 0.978 | 1.000 | 0.00% | 0.00% | 0.00% |
| Other Companies | 1.000 | 1.000 | 1.000 | 1.000 | | | 0.97% |
| | **1.0168** | **1.0224** | **1.0389** | **1.0371** | **98.90%** | **99.16%** | **100.00%** |

# APPENDIX 5.8

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Covid-19 Factor

**Alberta**
**Automobile Accident Insurance Benefits**
**Covid-19 Factors**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| | Accident Rate % | | | % of Drivers Working from | | Covid-19 Loss Reduction | | 2020 Covid-19 | |
| Month | 2016 | 2017 | Average | Home | Office | Home | Office | Factor | Accident Rate % |
| 1 | 9.40% | 9.80% | 9.60% | 50.00% | 50.00% | 0.00% | 0.00% | 100.00% | 9.60% |
| 2 | 7.30% | 8.30% | 7.80% | 50.00% | 50.00% | 0.00% | 0.00% | 100.00% | 7.80% |
| 3 | 7.30% | 8.60% | 7.95% | 50.00% | 50.00% | 70.00% | 0.00% | 65.00% | 5.17% |
| 4 | 6.70% | 6.30% | 6.50% | 50.00% | 50.00% | 70.00% | 70.00% | 30.00% | 1.95% |
| 5 | 7.80% | 7.10% | 7.45% | 50.00% | 50.00% | 70.00% | 10.00% | 60.00% | 4.47% |
| 6 | 8.30% | 7.80% | 8.05% | 50.00% | 50.00% | 30.00% | 10.00% | 80.00% | 6.44% |
| 7 | 7.80% | 7.40% | 7.60% | 50.00% | 50.00% | 15.00% | 10.00% | 87.50% | 6.65% |
| 8 | 7.40% | 7.30% | 7.35% | 50.00% | 50.00% | 5.00% | 5.00% | 95.00% | 6.98% |
| 9 | 8.00% | 7.50% | 7.75% | 50.00% | 50.00% | 5.00% | 5.00% | 95.00% | 7.36% |
| 10 | 8.90% | 8.30% | 8.60% | 50.00% | 50.00% | 5.00% | 5.00% | 95.00% | 8.17% |
| 11 | 9.20% | 11.10% | 10.15% | 50.00% | 50.00% | 5.00% | 5.00% | 95.00% | 9.64% |
| 12 | 11.90% | 10.50% | 11.20% | 50.00% | 50.00% | 5.00% | 5.00% | 95.00% | 10.64% |
| | 100.00% | 100.00% | 100.00% | | | | | Indicated 2020 | 84.88% |
| | | | | | | | | **Selected 2020** | **85.00%** |
| | | | | | | | | **Selected 2021** | **95.00%** |
| | | | | | | | | **Selected 2022** | **97.50%** |

Notes:

(1) from Alberta Traffic Collisions Statistics 2016 page 8, Table 2.1
(2) from Alberta Traffic Collisions Statistics 2017 page 8, Table 2.1
(3) Average of (1) and (2)
(4) to (5) Assumed driver distribution
(6) to (7) Factor to reflect reduction in frequency due to lockdowns and use of vehicle
(8) = (4) × [1 - (6]) + (5) × [1 - (7)]
(9) = (3) × (8)

# APPENDIX 5.9

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March 31, 2020 Written Premium per Vehicle

## Alberta Private Passenger Automobile - Excluding Farmers
## as of December 31, 2018

**Appendix 5.9**

**Table A: 2018-2Number of Written Vehicles**

Bulletin No: 2019-16 (2018 Actual Loss Ratio Exhibit PPA excld. Farmers Alberta)

| Coverage | Alberta |
|---|---|
| Third Party Liability | 2,766,202 |
| Accident Benefits | 2,767,256 |
| Underinsured Motorist | 2,710,549 |
| Collision | 2,041,611 |
| Comprehensive | 2,406,941 |
| Specified Perils | 21,786 |
| All Perils | 20,919 |
| **Grand Total** | 2,766,202 |

**Table B: 2018-2 Written Premium**

| Coverage | Alberta |
|---|---|
| Third Party Liability | 1,974,656,204 |
| Accident Benefits | 168,876,722 |
| Underinsured Motorist | 81,014,426 |
| Collision | 802,591,310 |
| Comprehensive | 595,610,859 |
| Specified Perils | 2,146,196 |
| All Perils | 15,574,782 |
| **Grand Total** | 3,640,470,499 |

**Table C: 2018-2 Written Premium @ March 31, 2020 level**

| Coverage | Alberta |
|---|---|
| Third Party Liability | 2,488,220,552 |
| Accident Benefits | 212,797,817 |
| Underinsured Motorist | 87,762,284 |
| Collision | 869,440,792 |
| Comprehensive | 645,220,513 |
| Specified Perils | 2,324,957 |
| All Perils | 16,872,038 |
| **Grand Total** | 4,322,638,953 |

**Table D: March 31, 2020 Written Premium per written vehicle**

| Coverage | Alberta |
|---|---|
| Third Party Liability | 899.51 |
| Accident Benefits | 76.90 |
| Underinsured Motorist | 32.38 |
| Collision | 425.86 |
| Comprehensive | 268.07 |
| Specified Perils | 106.72 |
| All Perils | 806.53 |
| **Grand Total** | 1,562.66 |
| **Full Package**[1] | 1,702.71 |

Note:

Table C = Table A x [1 + (Rate Change = 26.01% for TPL & AB; 8.33% for other coverage)]

Table D = Table C / Table A

[1] TPL + AB + UM + Col. + Comp.

Data source for Table A and Table B:

(1) Data from 2018-2 Actual Loss Ratio Exhibit (Bulletin No: 2019-16; Product: AUTO1005-AB)

# APPENDIX 5.10

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Total Canadian P&C Investment Yield

**Total Canadian P&C** **Appendix 5.10**

| | | 2019 | 2018 |
|---|---|---|---|
| Cash and Cash Equivalents | 01 | 3,176,192 | 2,491,442 |
| Investment Income due and accrued | 02 | 237,035 | 230,436 |
| Investments Accounted for Using the Equity Method: Pooled Funds | 45 | 7,776,587 | 7,520,427 |
| Total Investments | 19 | 62,492,348 | 59,281,609 |
| | | | |
| Net investment income excld. Realized Gains (Losses) & Gains (Losses) from FVO or FVTPL | | 1,845,903 | |
| Share of Net Income (Loss) of Pooled Funds using Equity Method | 47 | 273,494 | |
| | | | |
| Total Canadian P&C Investment Yield | | 3.00% | |

Source: (OSFI)

Q4 2018 P&C Assets

Q4 2018 P&C Statement of Income

Q4 2019 P&C Assets

Q4 2019 P&C Statement of Income

# APPENDIX 6 – MODEL DESCRIPTION

Description of Models 1-4

| Coverage | Model 1 - Pure No Fault (standard) | Model 2 - Pure No Fault (enhanced) | Model 3 - Choice (with or without tort) | Model 4 - Transitional |
|---|---|---|---|---|
| 1 Bodily injury in Alberta | no tort | no tort | if no tort is selected, consumer will get Model 1;<br>if tort is selected, consumer will get the current model for third party bodily injury liability but benefits are paid by own insurer;<br>no fault benefits are fully deductible from tort benefits | tort with PJI reform; cap contingency and expert fees |
| 2 Bodily injury outside of Alberta | tort, statutory minimum or selected limit | tort, statutory minimum or selected limit | tort, statutory minimum or selected limit | tort, statutory minimum or selected limit |
| 3 Property damage (vehicles only) in Alberta | direct compensation | direct compensation | direct compensation | direct compensation |
| 4 Property damage (all others) | tort, statutory minimum or selected limit | tort, statutory minimum or selected limit | tort, statutory minimum or selected limit | tort, statutory minimum or selected limit |
| 5 Accident benefits | | | | |
| 5.1 Medical expenses | | | | |
| Type I injury (minor) | reasonable expenses up to $3,500 within 90 days;<br>additional medical or rehabilitation expenses up to $4,000 within 240 days;<br>additional expenses of $4,500 subject to the approval of the injury navigator within 365 days. | reasonable expenses up to $3,500 within 90 days;<br>additional medical or rehabilitation expenses up to $4,000 within 240 days;<br>additional expenses of $4,500 subject to the approval of the injury navigator within 365 days. | reasonable medical expenses with sub-limits for certain treatments up to 2 year limit and $50,000 in aggregate | reasonable medical expenses with sub-limits for certain treatments up to 2 year limit and $50,000 in aggregate |
| Type II injury (permanent, non-CAT) | reasonable medical, rehabilitation and other expenses up to $25,000 within 2 years subject to the approval of injury navigator | reasonable medical, rehabilitation and other expenses up to $25,000 within 2 years subject to the approval of injury navigator | | |
| Type III injury (CAT) | reasonable medical expenses until death subject to an aggregate sum of $500,000 | reasonable medical expenses until death subject to an aggregate sum of $500,000 | | |
| 5.2 Certified attendant care or homecare expenses | | | | |
| Type I injury (minor) | not applicable | not applicable | not applicable | not applicable |
| Type II injury (permanent, non-CAT) | reasonable certified homecare expenses for 60 months subject to a maximum monthly amount of $1,000 and $60,000 in aggregate with the approval of the medical panel | reasonable certified homecare expenses for 6 months subject to a maximum monthly amount of $1,000 and $60,000 in aggregate with the approval of the medical panel | part of the $50,000 medical expenses | part of the $50,000 medical expenses |
| Type III injury (CAT) | reasonable certified attendant care expenses approved by the medical panel subject to a maximum of $6,000 per month in the first 2 years and $3,000 monthly thereafter;<br>the aggregate amount is $500,000 | reasonable certified attendant care expenses approved by the medical panel subject to a maximum of $6,000 per month in the first 2 years and $3,000 monthly thereafter;<br>the aggregate amount is $500,000 | part of the $50,000 medical expenses | part of the $50,000 medical expenses |
| 5.3 Diminished quality of life | | | | |
| Type I injury (minor) | not applicable | not applicable | not applicable | not applicable |
| Type II injury (permanent, non-CAT) | when maximum medical outcome is reached and impairment still exists, a permanent impairment (PI) benefit is payable based on the medical panel's assessment;<br>the benefit is PI percent times the maximum amount; | when maximum medical outcome is reached and impairment still exists, a permanent impairment (PI) benefit is payable based on the medical panel's assessment;<br>the benefit is PI percent times the maximum amount; | not applicable | not applicable |
| Type III injury (CAT) | A permanent impairment (PI) percent is determined by the medical panel; the benefit is the PI percent times the maximum amount ($300,000) | A whole person impairment (WPI) percent is determined by the medical panel; the benefit is the WPI percent times the maximum amount ($300,000) | not applicable | not applicable |
| 5.4 Housekeeping benefit | | | part of the $50,000 medical expenses | part of the $50,000 medical expenses |
| Type I injury (minor) | not applicable | not applicable | | |
| Type II injury (permanent, non-CAT) | reasonable housekeeping expenses subject to the approval of the injury navigator; the benefit is payable up to $150 per week for a maximum period of 6 months but not exceeding $3,000 in the aggregate | reasonable housekeeping expenses subject to the approval of the injury navigator; the benefit is payable up to $150 per week for a maximum period of 6 months but not exceeding $3,000 in the aggregate | | |
| Type III injury (CAT) | reasonable housekeeping expenses subject to the approval of the medical panel; the benefit is payable up to $150 per week for a period of 24 months ; after 24 months, an assessment will be made by the medical panel for future housekeeping expenses . The aggregate amount is $100,000. | reasonable housekeeping expenses subject to the approval of the medical panel; the benefit is payable up to $150 per week for a period of 24 months ; after 24 months, an assessment will be made by the medical panel for future housekeeping expenses . The aggregate amount is $100,000. | | |

| Coverage | Model 1 - Pure No Fault (standard) | Model 2 - Pure No Fault (enhanced) | Model 3 - Choice (with or without tort) | Model 4 - Transitional |
|---|---|---|---|---|
| 5.5 Income replacement benefit (IRB) for wage earners | IRB is payable if a person as a result of an automobile accident cannot perform the occupation that they trained for during the first 2 years of disability and any occupation thereafter.<br>Before age 65 the IRB is 90% of net wages (after tax, CPP, EI) less other benefits from employment(after tax basis, CPP, EI) up to $1000 per week; after age 65, IRB will be set at 2% times the number of years the individual has received this benefit.<br>For those who are employed and disabled after 61, full benefits will be extended at 90% of net income for 5 years beyond 65 as long as they satisfy the definition of disability (2 yr own occ and all occ thereafter). There is a waiting period of 7 days for this benefit | IRB is payable if a person as a result of an automobile accident cannot perform his occupation that they trained for during the first 2 years of disability and any occupation thereafter.<br>Before age 65 the IRB is 100% of net wages (after tax, CPP, EI) less other benefits from employment(after tax basis, CPP, EI) up to $1000 per week; after age 65, IRB will be set at 2% times the number of years the individual has received this benefit.<br>For those who are employed and disabled after 61, full benefits will be extended at 90% of net income for 5 years beyond 65 as long as they satisfy the definition of disability (2 yr own occ and all occ thereafter). There is a waiting period of 7 days for this benefit | after a 7 day waiting period, 80% of gross wages less other benefits from employment up to $400 per week; maximum duration is 2 years | after a 7 day waiting period, 80% of gross wages less other benefits from employment up to $400 per week; maximum duration is 2 years |
| 5.6 IRB for non-wage earners | the injured person must be 18 or over;<br>there is a waiting period of 26 weeks or age 18 whichever is later;<br>after the waiting period, a claim panel will assess the loss of earning capacity and assign a percent loss;<br>IRB is equal to percent loss times $400 per week up to 2 years<br>after 2 years if the person cannot perform normal daily activities,<br>IRB is equal to $585 per week (median net wage) less any CPP disability | the injured person must be 18 or over;<br>there is a waiting period of 26 weeks or age 18 whichever is later;<br>after the waiting period, a claim panel will assess the loss of earning capacity and assign a percent loss;<br>IRB is equal to percent loss times $400 per week up to 2 years<br>after 2 years if the person cannot perform normal daily activities,<br>IRB is equal to $585 per week (median net wage) less any CPP disability | 18 years or over<br>completely incapacitated<br>unable to perform any household duties<br>benefit is $135 per week up to 26 weeks | 18 years or over<br>completely incapacitated<br>unable to perform any household duties<br>benefit is $135 per week up to 26 weeks |
| 5.7 Death benefit | $100,000 for the head of household or<br>$100,000 for a spouse or adult interdependent partner plus<br>$50,000 for each dependent child under 18 plus<br>$25,000 for each dependent relative over 18 living in the same household; the aggregate benefit is $500,000 | $100,000 for the head of household or<br>$100,000 for a spouse or adult interdependent partner plus<br>$50,000 for each dependent child under 18 plus<br>$25,000 for each dependent relative over 18 living in the same household; the aggregate benefit is $500,000 | $10,000 for the head of household or<br>$10,000 for a spouse or adult interdependent partner plus<br>varying amount for each dependent child depending on age<br>plus $400 per family for grief counselling<br>with respect of the death of any one person | $10,000 for the head of household or<br>$10,000 for a spouse or adult interdependent partner plus<br>varying amount for each dependent child depending on age<br>plus $400 per family for grief counselling<br>with respect of the death of any one person |
| 5.8 Funeral benefit | up to $10,000 in respect of the death of any one person | up to $10,000 in respect of the death of any one person | up to $5,000 in respect of the death of any one person | up to $5,000 in respect of the death of any one person |
| 5.9 Optional accident benefits | available to provide higher aggregate limit | available to provide higher aggregate limit | not applicable | not applicable |
| 5.10 Indexation to Alberta CPI | automatic every January 1 based on change in CPI in the past 12 months ending on September 30 of the previous year | automatic every January 1 based on change in CPI in the past 12 months ending on September 30 of the previous year | not applicable | not applicable |
| 6 Uninsured/unidentified motorist | | | | |
| Bodily injury in Alberta | no tort | no tort | optional tort | tort with PJI reform; cap contingency and expert fees |
| Bodily injury outside of Alberta | tort | tort | tort, statutory minimum or selected limit | tort, statutory minimum or selected limit |
| Vehicle damage in Alberta | direct compensation | direct compensation | direct compensation | direct compensation |
| Vehicle damage outside of Alberta | either direct compensation or tort depending on location | either direct compensation or tort depending on location | either direct compensation or tort depending on location | either direct compensation or tort depending on location |
| Other property damage | tort | tort | tort | tort |
| 7 Underinsured motorist | | | | |
| Bodily injury in Alberta | not applicable | not applicable | optional tort | tort with PJI reform; cap contingency and expert fees |
| Bodily injury outside of Alberta | tort with selected limit | tort with selected limit | tort with selected limit | tort with selected limit |
| 8 Collision | same as current policy; | same as current policy; | same as current policy; | same as current policy; |
| 9 Comprehensive | same as current policy; | same as current policy; | same as current policy; | same as current policy; |
| 10 All perils | same as current policy; | same as current policy; | same as current policy; | same as current policy; |
| 11 Specified perils | same as current policy; | same as current policy; | same as current policy; | same as current policy; |
| 12 Other features | mandatory winter tires | mandatory winter tires | mandatory winter tires | mandatory winter tires |

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# APPENDIX 7 – DERIVATION OF TARGET PREMIUM

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Derivation of Target Premium for Current Model as well as Models 1 to 4

**Alberta**
**Automobile Accident Insurance Benefits**
**Base Coverage Loss Cost (Incl. ALAE; Excl. CAT, ULAE and Health Levy) Comparison**
**Undiscounted basis (At July 01, 2018 Level)**

| | | Incl. CAT | | | Excl. CAT | | | Excl. CAT | | | | | | | Trans. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GISA | GISA | GISA | GISA | GISA | GISA | Trended to 7/01/2018 Level | | | Current | Model | Model | Model | Model |
| | | AY 2016 | AY 2017 | AY 2018 | AY 2016 | AY 2017 | AY 2018 | AY 2016 | AY 2017 | AY 2018 | Model | 1 | 2 | 3 | 4 |
| | | Loss | Loss | Loss | Loss | Loss | Loss | Loss | Loss | Loss | Loss | Loss | Loss | Loss | Loss |
| | **Accident Benefits (AB)** | Cost | Cost | Cost | Cost | Cost | Cost | Cost | Cost | Cost | Cost | Cost | Cost | Cost | Cost |
| (1) | Funeral (KOL 30) | 0.30 | 0.27 | 0.33 | 0.30 | 0.27 | 0.33 | 0.36 | 0.29 | 0.33 | 0.32 | 0.61 | 0.61 | 0.31 | 0.31 |
| (2) | Death Benefits (KOL 32) | 1.24 | 1.01 | 0.72 | 1.24 | 1.01 | 0.72 | 1.46 | 1.09 | 0.72 | 0.87 | 5.20 | 5.20 | 0.85 | 0.85 |
| | Medical/Rehabilitation (KOL 31) | 34.36 | 41.41 | 45.14 | 34.36 | 41.41 | 45.14 | 40.45 | 44.93 | 45.14 | 45.06 | | | 43.93 | 43.93 |
| (3) | Medical/Rehabilitation expenses | | | | | | | | | | | 72.10 | 72.10 | | |
| (4) | Certified attendant care or homecare expenses | | | | | | | | | | | 10.39 | 10.39 | | |
| | Disability Income (KOL 34) | 11.26 | 12.19 | 12.73 | 11.26 | 12.19 | 12.73 | 13.26 | 13.23 | 12.73 | 12.93 | | | 12.61 | 12.61 |
| (5) | Earners IRB | | | | | | | | | | | 20.29 | 27.97 | | |
| (6) | Non-earners loss of earning capacity | | | | | | | | | | | 2.24 | 2.24 | | |
| (7) | Diminished quality of life | | | | | | | | | | | 36.91 | 36.91 | | |
| (8) | Housekeeping | | | | | | | | | | | 0.76 | 0.76 | | |
| (9) | Supplementary Benefits (KOL 37) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| (10) | Uninsured Motorist (KOL 39) | 0.58 | 0.18 | 0.33 | 0.58 | 0.18 | 0.33 | 0.68 | 0.19 | 0.33 | 0.27 | 0.02 | 0.02 | 0.27 | 0.27 |
| | **Total Accident Benefits** | **47.74** | **55.06** | **59.26** | **47.74** | **55.06** | **59.26** | **56.20** | **59.74** | **59.26** | **59.46** | **148.53** | **156.21** | **57.97** | **57.97** |
| | **Third Party Liability (TPL)** | | | | | | | | | | | | | | |
| | Tort Bodily Injury (KOL 1,2) | 375.24 | 380.78 | 374.91 | 375.24 | 380.78 | 374.91 | 437.67 | 411.24 | 374.91 | | | | | |
| (11) | BI in Alberta | | | | | | | | | | 357.15 | 0.00 | 0.00 | 327.39 | 309.73 |
| (12) | BI out of Alberta | | | | | | | | | | 32.29 | 32.29 | 32.29 | 32.29 | 32.29 |
| | Property Damage (KOL 9) | 145.81 | 158.38 | 159.86 | 145.81 | 158.38 | 159.86 | 150.22 | 160.76 | 159.86 | | | | | |
| (13) | DCPD | | | | | | | | | | 153.48 | 147.77 | 147.77 | 147.77 | 147.77 |
| (14) | Other PD incl. Out of Alberta | | | | | | | | | | 6.74 | 6.74 | 6.74 | 6.74 | 6.74 |
| | **Total Third Party Liability** | **521.04** | **539.16** | **534.77** | **521.04** | **539.16** | **534.77** | **587.89** | **572.00** | **534.77** | **549.66** | **186.80** | **186.80** | **514.19** | **496.53** |
| | **Others** | | | | | | | | | | | | | | |
| (15) | Underinsured Motorist (UM, Major Coverage 0) | 6.03 | 5.03 | 4.09 | 6.03 | 5.03 | 4.09 | 6.53 | 5.23 | 4.09 | 4.55 | 0.38 | 0.38 | 4.55 | 4.55 |
| (16) | Collision (CL,Major Coverage 30) | 228.74 | 249.56 | 246.32 | 228.74 | 249.56 | 246.32 | 240.32 | 255.80 | 246.32 | 250.11 | 243.86 | 243.86 | 243.86 | 243.86 |
| (17) | Comprehensive (COMP, Major Coverage 80) | 235.11 | 159.47 | 159.56 | 132.89 | 127.80 | 122.33 | 150.72 | 136.11 | 122.33 | 127.84 | 127.84 | 127.84 | 127.84 | 127.84 |
| (18) | All Perils (Major Coverage 40) | 460.78 | 418.24 | 457.23 | 382.58 | 388.26 | 410.58 | 413.80 | 403.79 | 410.58 | 407.86 | 401.06 | 401.06 | 401.06 | 401.06 |
| (19) | Specified Perils (Major Coverage 20) | 59.75 | 54.94 | 52.59 | 45.77 | 44.67 | 45.82 | 52.41 | 47.80 | 45.82 | 46.61 | 46.61 | 46.61 | 46.61 | 46.61 |
| | **Full Package (AB+TPL+UM+CL+COMP)** | **1,038.66** | **1,008.28** | **1,004.00** | **936.44** | **976.62** | **966.77** | **1,041.66** | **1,028.89** | **966.77** | **991.62** | **707.42** | **715.10** | **948.41** | **930.76** |

Note:
(1) Models 1 and 2: From Appendix 1.1; Models 3 and 4: expected to have 2.50% savings from current due to winter tire policy.
(2) Models 1 and 2: From Appendix 1.2; Models 3 and 4: expected to have 2.50% savings from current due to winter tire policy.
(3) Models 1 and 2: From Appendix 1.3; Models 3 and 4: expected to have 2.50% savings from current due to winter tire policy.
(4) Models 1 and 2, From Appendix 1.4; Models 3 and 4: expected to have 2.50% savings from current due to winter tire policy.
(5) Models 1 and 2, From Appendix 1.5; Models 3 and 4: expected to have 2.50% savings from current due to winter tire policy.
(6) Models 1 and 2: From Appendix 1.6; Models 3 and 4: expected to have 2.50% savings from current due to winter tire policy.
(7) Models 1 and 2: From Appendix 1.7; Models 3 and 4: expected to have 2.50% savings from current due to winter tire policy.
(8) Models 1 and 2: From Appendix 1.8; Models 3 and 4: expected to have 2.50% savings from current due to winter tire policy.
(9) 2.5% savings due to winter tire policy. In Models 1 and 2, costs are loaded with additional 5% due to expected frequency increase
(10) 91.71% savings in Models 1 and 2 due to reduction in BI claims in Alberta
(11) Due to no fault system and winter tires policy, 8.33% savings in model 3; due to all policy changes applicable, 13.28% savings in model 4
(12) No Change
(13) Due to winter tires and preferred shop policy, 3.72% savings in all models
(14) No Change
(15) 91.71% savings in Models 1 and 2 due reduction in BI claims in Alberta.
(16) Due to winter tires policy, 2.50% savings in all models
(17) No Change
(18) Due to winter tires policy, 1.67% savings in all models
(19) No Change

**Alberta**
**Automobile Accident Insurance Benefits**
**Base Coverage Loss Cost (Incl. ALAE; Excl. CAT, ULAE and Health Levy) Comparison**
**Discounted basis (At July 01, 2018 Level)**

| | | Disc Factor | Current Loss Cost | Model 1 Loss Cost | Model 2 Loss Cost | Model 3 Loss Cost | Trans. Model 4 Loss Cost |
|---|---|---|---|---|---|---|---|
| | **Accident Benefits (AB)** | | | | | | |
| (1) | Funeral (KOL 30) | 0.9432 | 0.30 | 0.58 | 0.58 | 0.29 | 0.29 |
| (2) | Death Benefits (KOL 32) | 0.9432 | 0.82 | 4.90 | 4.90 | 0.80 | 0.80 |
| | Medical/Rehabilitation (KOL 31) | 0.9432 | 42.50 | | | 41.44 | 41.44 |
| (3) | Medical/Rehabilitation expenses | 0.9432 | 0.00 | 71.13 | 71.13 | | |
| (4) | Certified attendant care or homecare expenses | 0.9432 | 0.00 | 10.23 | 10.23 | | |
| | Disability Income (KOL 34) | 0.9432 | 12.20 | | | 11.89 | 11.89 |
| (5) | Earners IRB | 0.9432 | 0.00 | 19.56 | 26.91 | | |
| (6) | Non-earners loss of earning capacity | 0.9432 | 0.00 | 2.07 | 2.07 | | |
| (7) | Diminished quality of life | 0.9432 | 0.00 | 36.18 | 36.18 | | |
| (8) | Housekeeping | 0.9432 | 0.00 | 0.74 | 0.74 | | |
| (9) | Supplementary Benefits (KOL 37) | 0.9432 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| (10) | Uninsured Motorist (KOL 39) | 0.9432 | 0.26 | 0.02 | 0.02 | 0.25 | 0.25 |
| | **Total Accident Benefits** | | **56.08** | **145.42** | **152.77** | **54.68** | **54.68** |
| | **Third Party Liability (TPL)** | | | | | | |
| | Tort Bodily Injury (KOL 1,2) | | | | | | |
| (11) | BI in Alberta | 0.8600 | 307.14 | 0.00 | 0.00 | 281.54 | 266.36 |
| (12) | BI out of Alberta | 0.8600 | 27.77 | 27.77 | 27.77 | 27.77 | 27.77 |
| | Property Damage (KOL 9) | | | | | | |
| (13) | DCPD | 0.9565 | 146.79 | 141.33 | 141.33 | 141.33 | 141.33 |
| (14) | Other PD incl. Out of Alberta | 0.9565 | 6.45 | 6.45 | 6.45 | 6.45 | 6.45 |
| | **Total Third Party Liability** | | **488.15** | **175.55** | **175.55** | **457.09** | **441.91** |
| | **Others** | | | | | | |
| (15) | Underinsured Motorist (UM, Major Coverage 0) | 0.8129 | 3.70 | 0.31 | 0.31 | 3.70 | 3.70 |
| (16) | Collision (CL,Major Coverage 30) | 0.9706 | 242.76 | 236.69 | 236.69 | 236.69 | 236.69 |
| (17) | Comprehensive (COMP, Major Coverage 80) | 0.9650 | 123.37 | 123.37 | 123.37 | 123.37 | 123.37 |
| (18) | All Perils (Major Coverage 40) | 0.9663 | 394.13 | 387.56 | 387.56 | 387.56 | 387.56 |
| (19) | Specified Perils (Major Coverage 20) | 0.9662 | 45.04 | 45.04 | 45.04 | 45.04 | 45.04 |
| | **Full Package (AB+TPL+UM+CL+COMP)** | | **914.06** | **681.34** | **688.69** | **875.53** | **860.35** |

Note:
Discount Factors are from Appendix 5
Yellowed sections use discount factors shown (3% discount rate).
Unhighlighted sections are discounted in applicable appendices (see below) using 1% discount rate/real rate of return
(3) Models 1 and 2: From Appendix 1.3
(4) Models 1 and 2: From Appendix 1.4
(5) Models 1 and 2: From Appendix 1.5
(6) Models 1 and 2: From Appendix 1.6
(7) Models 1 and 2: From Appendix 1.7
(8) Models 1 and 2: From Appendix 1.8

**Alberta**
**Automobile Accident Insurance Benefits**
**Summary of Cost by Coverages** **Current**
Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| | | At July 01, 2018 Level | | | | All Claim Related | | Trending Factors | | | | | Undiscounted | Discounted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Undisc. Loss Cost | Health Levy | CAT | 9.25% ULAE | Undisc. Loss Cost | Disc. Loss Cost | 2020 Jan.01 Factor | 2021 Jan.01 Factor | 2022 Jan.01 Factor | 2023 Jan.01 Factor | Covid 19 Factor | PY2022 Loss Cost | PY2022 Loss Cost |
| | **Accident Benefits (AB)** | | | | | | | | | | | | | |
| (1) | Funeral (KOL 30) | 0.32 | | | 0.03 | 0.34 | 0.32 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.48 | 0.46 |
| (2) | Death Benefits (KOL 32) | 0.87 | | | 0.08 | 0.95 | 0.90 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 1.34 | 1.27 |
| | Medical/Rehabilitation (KOL 31) | 45.06 | | | 4.17 | 49.22 | 46.43 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 69.28 | 65.35 |
| (3) | Medical/Rehabilitation expenses | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (4) | Certified attendant care or homecare expenses | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| | Disability Income (KOL 34) | 12.93 | | | 1.20 | 14.13 | 13.33 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 19.88 | 18.75 |
| (5) | Earners IRB | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (6) | Non-earners loss of earning capacity | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (7) | Diminished quality of life | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (8) | Housekeeping | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (9) | Supplementary Benefits (KOL 37) | 0.01 | | | 0.00 | 0.01 | 0.01 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.02 | 0.01 |
| (10) | Uninsured Motorist (KOL 39) | 0.27 | | | 0.03 | 0.30 | 0.28 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.42 | 0.40 |
| | **Total Accident Benefits** | **59.46** | **0.00** | **0.00** | **5.50** | **64.96** | **61.27** | | | | | | **91.43** | **86.24** |
| | **Third Party Liability (TPL)** | | | | | | | | | | | | | |
| | Tort Bodily Injury (KOL 1,2) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 0.00 | 0.00 |
| (11) | BI in Alberta | 357.15 | 42.51 | | 33.04 | 432.69 | 372.10 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 576.02 | 495.36 |
| (12) | BI out of Alberta | 32.29 | | | 2.99 | 35.28 | 30.34 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 46.96 | 40.39 |
| | Property Damage (KOL 9) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 0.00 | 0.00 |
| (13) | DCPD | 153.48 | | | 14.20 | 167.67 | 160.37 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 174.81 | 167.20 |
| (14) | Other PD incl. Out of Alberta | 6.74 | | | 0.62 | 7.37 | 7.05 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 7.68 | 7.35 |
| | **Total Third Party Liability** | **549.66** | **42.51** | **0.00** | **50.84** | **643.01** | **569.85** | | | | | | **805.48** | **710.29** |
| | **Others** | | | | | | | | | | | | | |
| (15) | Underinsured Motorist (UM, Major Coverage 0) | 4.55 | | | 0.42 | 4.97 | 4.04 | 1.061 | 1.040 | 1.040 | 1.040 | 0.975 | 5.78 | 4.70 |
| (16) | Collision (CL,Major Coverage 30) | 250.11 | | | 23.14 | 273.25 | 265.21 | 1.038 | 1.025 | 1.025 | 1.025 | 0.975 | 297.73 | 288.97 |
| (17) | Comprehensive (COMP, Major Coverage 80) | 127.84 | | 79.61 | 11.83 | 219.28 | 211.61 | 1.099 | 1.065 | 1.065 | 1.065 | 1.000 | 291.12 | 280.94 |
| (18) | All Perils (Major Coverage 40) | 407.86 | | 90.00 | 37.73 | 535.59 | 517.56 | 1.061 | 1.040 | 1.040 | 1.040 | 0.983 | 628.30 | 607.15 |
| (19) | Specified Perils (Major Coverage 20) | 46.61 | | 26.73 | 4.31 | 77.66 | 75.04 | 1.107 | 1.070 | 1.070 | 1.070 | 1.000 | 105.30 | 101.74 |
| | **Full Package (AB+TPL+UM+CL+COMP)** | **991.62** | **42.51** | **79.61** | **91.73** | **1,205.47** | **1,111.99** | | | | | | **1,491.53** | **1,371.14** |

Note:
Past and Future trends are from AIRB 2020 Mid-year Review
2020 Jan 01 factor is the 18-month factor to bring the July 01, 2018 (base) to the Jan 01, 2020 level
COVID-19 Factors are applied to all sub coverages except for comprehensive and Specified Perils; for All Perils, the impact is expected to be 2/3 of the collision. The factor is assumed to be 0.983 = 1 - (2.5%× 2/3).

**Alberta**
**Automobile Accident Insurance Benefits**
**Summary of Cost by Coverages** **Model 1**
Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| Alberta CPI Projection | | | |
|---|---|---|---|
| 1.018 | 1.02 | 1.02 | 1.02 |

| | | At July 01, 2018 Level | | | | All Claim Related | | Trending Factors | | | | | Undiscounted | Discounted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Undisc. Loss Cost | Health Levy | CAT | 9.25% ULAE | Undisc. Loss Cost | Disc. Loss Cost | 2020 Jan.01 Factor | 2021 Jan.01 Factor | 2022 Jan.01 Factor | 2023 Jan.01 Factor | Covid 19 Factor | PY2022 Loss Cost | PY2022 Loss Cost |
| | **Accident Benefits (AB)** | | | | | | | | | | | | | |
| (1) | Funeral (KOL 30) | 0.61 | | | 0.06 | 0.67 | 0.63 | 1.027 | 1.020 | 1.020 | 1.020 | 0.975 | 0.71 | 0.67 |
| (2) | Death Benefits (KOL 32) | 5.20 | | | 0.48 | 5.68 | 5.36 | 1.000 | 1.000 | 1.000 | 1.000 | 0.975 | 5.54 | 5.22 |
| | Medical/Rehabilitation (KOL 31) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.058 | 1.040 | 1.040 | 1.040 | 0.975 | 0.00 | 0.00 |
| (3) | Medical/Rehabilitation expenses | 72.10 | | | 6.67 | 78.77 | 77.71 | 1.058 | 1.040 | 1.040 | 1.040 | 0.975 | 91.36 | 90.13 |
| (4) | Certified attendant care or homecare expenses | 10.39 | | | 0.96 | 11.35 | 11.18 | 1.027 | 1.020 | 1.020 | 1.020 | 0.975 | 12.06 | 11.88 |
| | Disability Income (KOL 34) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.027 | 1.020 | 1.020 | 1.020 | 0.975 | 0.00 | 0.00 |
| (5) | Earners IRB | 20.29 | | | 1.88 | 22.17 | 21.37 | 1.027 | 1.020 | 1.020 | 1.020 | 0.975 | 23.56 | 22.71 |
| (6) | Non-earners loss of earning capacity | 2.24 | | | 0.21 | 2.45 | 2.26 | 1.000 | 1.000 | 1.000 | 1.000 | 0.975 | 2.39 | 2.20 |
| (7) | Diminished quality of life | 36.91 | | | 3.41 | 40.32 | 39.53 | 1.000 | 1.000 | 1.000 | 1.000 | 0.975 | 39.32 | 38.54 |
| (8) | Housekeeping | 0.76 | | | 0.07 | 0.83 | 0.81 | 1.027 | 1.020 | 1.020 | 1.020 | 0.975 | 0.88 | 0.86 |
| (9) | Supplementary Benefits (KOL 37) | 0.01 | | | 0.00 | 0.01 | 0.01 | 1.000 | 1.000 | 1.000 | 1.000 | 0.975 | 0.01 | 0.01 |
| (10) | Uninsured Motorist (KOL 39) | 0.02 | | | 0.00 | 0.02 | 0.02 | 1.000 | 1.000 | 1.000 | 1.000 | 0.975 | 0.02 | 0.02 |
| | **Total Accident Benefits** | **148.53** | **0.00** | **0.00** | **13.74** | **162.27** | **158.87** | | | | | | **175.85** | **172.25** |
| | **Third Party Liability (TPL)** | | | | | | | | | | | | | |
| | Tort Bodily Injury (KOL 1,2) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 0.00 | 0.00 |
| (11) | BI in Alberta | 0.00 | 42.51 | | 0.00 | 42.51 | 36.55 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 56.59 | 48.66 |
| (12) | BI out of Alberta | 32.29 | | | 2.99 | 35.28 | 30.34 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 46.96 | 40.39 |
| | Property Damage (KOL 9) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 0.00 | 0.00 |
| (13) | DCPD | 147.77 | | | 13.67 | 161.44 | 154.41 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 168.31 | 160.98 |
| (14) | Other PD incl. Out of Alberta | 6.74 | | | 0.62 | 7.37 | 7.05 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 7.68 | 7.35 |
| | **Total Third Party Liability** | **186.80** | **42.51** | **0.00** | **17.28** | **246.59** | **228.34** | | | | | | **279.54** | **257.37** |
| | **Others** | | | | | | | | | | | | | |
| (15) | Underinsured Motorist (UM, Major Coverage 0) | 0.38 | | | 0.03 | 0.41 | 0.33 | 1.061 | 1.040 | 1.040 | 1.040 | 0.975 | 0.48 | 0.39 |
| (16) | Collision (CL,Major Coverage 30) | 243.86 | | | 22.56 | 266.42 | 258.58 | 1.038 | 1.025 | 1.025 | 1.025 | 0.975 | 290.28 | 281.75 |
| (17) | Comprehensive (COMP, Major Coverage 80) | 127.84 | | 79.61 | 11.83 | 219.28 | 211.61 | 1.099 | 1.065 | 1.065 | 1.065 | 1.000 | 291.12 | 280.94 |
| (18) | All Perils (Major Coverage 40) | 401.06 | | 90.00 | 37.10 | 528.16 | 510.38 | 1.061 | 1.040 | 1.040 | 1.040 | 0.983 | 619.59 | 598.73 |
| (19) | Specified Perils (Major Coverage 20) | 46.61 | | 26.73 | 4.31 | 77.66 | 75.04 | 1.107 | 1.070 | 1.070 | 1.070 | 1.000 | 105.30 | 101.74 |
| | **Full Package (AB+TPL+UM+CL+COMP)** | **707.42** | **42.51** | **79.61** | **65.44** | **894.97** | **857.75** | | | | | | **1,037.27** | **992.70** |

Note:
CPI forecasting is from Government of Alberta 2020 fiscal plan (economic outlook section)
2020 Jan 01 factor is the 18-month factor to bring the July 01, 2018 (base) to the Jan 01, 2020 level
AB are trended using CPI related factors. Medical Benefit is trended by CPI+2%. Other sections are trended by AIRB factors.
Death Benefit,non-earner disability benefit, diminished quality of life, supplementary benefit and uninsured motorist are assumed to have no trend
COVID 19 factors are assumed to be as same as current model

**Alberta**
**Automobile Accident Insurance Benefits**
**Summary of Cost by Coverages** **Model 2**
Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| Alberta CPI Projection | | | |
|---|---|---|---|
| 1.018 | 1.020 | 1.020 | 1.020 |

| | | At July 01, 2018 Level | | | | All Claim Related | | Trending Factors | | | | | Undiscounted | Discounted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Undisc. Loss Cost | Health Levy | CAT | 9.25% ULAE | Undisc. Loss Cost | Disc. Loss Cost | 2020 Jan.01 Factor | 2021 Jan.01 Factor | 2022 Jan.01 Factor | 2023 Jan.01 Factor | Covid 19 Factor | PY2022 Loss Cost | PY2022 Loss Cost |
| | **Accident Benefits (AB)** | | | | | | | | | | | | | |
| (1) | Funeral (KOL 30) | 0.61 | | | 0.06 | 0.67 | 0.63 | 1.027 | 1.020 | 1.020 | 1.020 | 0.975 | 0.71 | 0.67 |
| (2) | Death Benefits (KOL 32) | 5.20 | | | 0.48 | 5.68 | 5.36 | 1.000 | 1.000 | 1.000 | 1.000 | 0.975 | 5.54 | 5.22 |
| | Medical/Rehabilitation (KOL 31) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.058 | 1.040 | 1.040 | 1.040 | 0.975 | 0.00 | 0.00 |
| (3) | Medical/Rehabilitation expenses | 72.10 | | | 6.67 | 78.77 | 77.71 | 1.058 | 1.040 | 1.040 | 1.040 | 0.975 | 91.36 | 90.13 |
| (4) | Certified attendant care or homecare expenses | 10.39 | | | 0.96 | 11.35 | 11.18 | 1.027 | 1.020 | 1.020 | 1.020 | 0.975 | 12.06 | 11.88 |
| | Disability Income (KOL 34) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.027 | 1.020 | 1.020 | 1.020 | 0.975 | 0.00 | 0.00 |
| (5) | Earners IRB | 27.97 | | | 2.59 | 30.56 | 29.40 | 1.027 | 1.020 | 1.020 | 1.020 | 0.975 | 32.47 | 31.24 |
| (6) | Non-earners loss of earning capacity | 2.24 | | | 0.21 | 2.45 | 2.26 | 1.000 | 1.000 | 1.000 | 1.000 | 0.975 | 2.39 | 2.20 |
| (7) | Diminished quality of life | 36.91 | | | 3.41 | 40.32 | 39.53 | 1.000 | 1.000 | 1.000 | 1.000 | 0.975 | 39.32 | 38.54 |
| (8) | Housekeeping | 0.76 | | | 0.07 | 0.83 | 0.81 | 1.027 | 1.020 | 1.020 | 1.020 | 0.975 | 0.88 | 0.86 |
| (9) | Supplementary Benefits (KOL 37) | 0.01 | | | 0.00 | 0.01 | 0.01 | 1.000 | 1.000 | 1.000 | 1.000 | 0.975 | 0.01 | 0.01 |
| (10) | Uninsured Motorist (KOL 39) | 0.02 | | | 0.00 | 0.02 | 0.02 | 1.000 | 1.000 | 1.000 | 1.000 | 0.975 | 0.02 | 0.02 |
| | **Total Accident Benefits** | **156.21** | **0.00** | **0.00** | **14.45** | **170.66** | **166.90** | | | | | | **184.77** | **180.78** |
| | **Third Party Liability (TPL)** | | | | | | | | | | | | | |
| | Tort Bodily Injury (KOL 1,2) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 0.00 | 0.00 |
| (11) | BI in Alberta | 0.00 | 42.51 | | 0.00 | 42.51 | 36.55 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 56.59 | 48.66 |
| (12) | BI out of Alberta | 32.29 | | | 2.99 | 35.28 | 30.34 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 46.96 | 40.39 |
| | Property Damage (KOL 9) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 0.00 | 0.00 |
| (13) | DCPD | 147.77 | | | 13.67 | 161.44 | 154.41 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 168.31 | 160.98 |
| (14) | Other PD incl. Out of Alberta | 6.74 | | | 0.62 | 7.37 | 7.05 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 7.68 | 7.35 |
| | **Total Third Party Liability** | **186.80** | **42.51** | **0.00** | **17.28** | **246.59** | **228.34** | | | | | | **279.54** | **257.37** |
| | **Others** | | | | | | | | | | | | | |
| (15) | Underinsured Motorist (UM, Major Coverage 0) | 0.38 | | | 0.03 | 0.41 | 0.33 | 1.061 | 1.040 | 1.040 | 1.040 | 0.975 | 0.48 | 0.39 |
| (16) | Collision (CL,Major Coverage 30) | 243.86 | | | 22.56 | 266.42 | 258.58 | 1.038 | 1.025 | 1.025 | 1.025 | 0.975 | 290.28 | 281.75 |
| (17) | Comprehensive (COMP, Major Coverage 80) | 127.84 | | 79.61 | 11.83 | 219.28 | 211.61 | 1.099 | 1.065 | 1.065 | 1.065 | 1.000 | 291.12 | 280.94 |
| (18) | All Perils (Major Coverage 40) | 401.06 | | 90.00 | 37.10 | 528.16 | 510.38 | 1.061 | 1.040 | 1.040 | 1.040 | 0.983 | 619.59 | 598.73 |
| (19) | Specified Perils (Major Coverage 20) | 46.61 | | 26.73 | 4.31 | 77.66 | 75.04 | 1.107 | 1.070 | 1.070 | 1.070 | 1.000 | 105.30 | 101.74 |
| | **Full Package (AB+TPL+UM+CL+COMP)** | **715.10** | **42.51** | **79.61** | **66.15** | **903.36** | **865.78** | | | | | | **1,046.19** | **1,001.23** |

Note:
CPI forecasting is from Government of Alberta 2020 fiscal plan (economic outlook section)
2020 Jan 01 factor is the 18-month factor to bring the July 01, 2018 (base) to the Jan 01, 2020 level
AB are trended using CPI related factors. Other sections are trended by AIRB factors.
Death Benefit, non-earner disability benefit, diminished quality of life, supplementary benefit and uninsured motorist are assumed to have no trend
COVID 19 factors are assumed to be as same as current model

**Alberta**
**Automobile Accident Insurance Benefits**
**Summary of Cost by Coverages** **Model 3**
Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| | | At July 01, 2018 Level | | | | All Claim Related | | Trending Factors | | | | | Undiscounted | Discounted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Undisc. Loss Cost | Health Levy | CAT | 9.25% ULAE | Undisc. Loss Cost | Disc. Loss Cost | 2020 Jan.01 Factor | 2021 Jan.01 Factor | 2022 Jan.01 Factor | 2023 Jan.01 Factor | Covid 19 Factor | PY2022 Loss Cost | PY2022 Loss Cost |
| | **Accident Benefits (AB)** | | | | | | | | | | | | | |
| (1) | Funeral (KOL 30) | 0.31 | | | 0.03 | 0.34 | 0.32 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.47 | 0.45 |
| (2) | Death Benefits (KOL 32) | 0.85 | | | 0.08 | 0.93 | 0.88 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 1.31 | 1.23 |
| | Medical/Rehabilitation (KOL 31) | 43.93 | | | 4.06 | 47.99 | 45.27 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 67.55 | 63.71 |
| (3) | Medical/Rehabilitation expenses | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (4) | Certified attendant care or homecare expenses | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| | Disability Income (KOL 34) | 12.61 | | | 1.17 | 13.77 | 12.99 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 19.39 | 18.29 |
| (5) | Earners IRB | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (6) | Non-earners loss of earning capacity | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (7) | Diminished quality of life | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (8) | Housekeeping | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (9) | Supplementary Benefits (KOL 37) | 0.01 | | | 0.00 | 0.01 | 0.01 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.01 | 0.01 |
| (10) | Uninsured Motorist (KOL 39) | 0.27 | | | 0.02 | 0.29 | 0.28 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.41 | 0.39 |
| | **Total Accident Benefits** | **57.97** | **0.00** | **0.00** | **5.36** | **63.34** | **59.74** | | | | | | **89.14** | **84.08** |
| | **Third Party Liability (TPL)** | | | | | | | | | | | | | |
| | Tort Bodily Injury (KOL 1,2) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 0.00 | 0.00 |
| (11) | BI in Alberta | 327.39 | 42.51 | | 30.28 | 400.17 | 344.14 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 532.73 | 458.13 |
| (12) | BI out of Alberta | 32.29 | | | 2.99 | 35.28 | 30.34 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 46.96 | 40.39 |
| | Property Damage (KOL 9) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 0.00 | 0.00 |
| (13) | DCPD | 147.77 | | | 13.67 | 161.44 | 154.41 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 168.31 | 160.98 |
| (14) | Other PD incl. Out of Alberta | 6.74 | | | 0.62 | 7.37 | 7.05 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 7.68 | 7.35 |
| | **Total Third Party Liability** | **514.19** | **42.51** | **0.00** | **47.56** | **604.25** | **535.93** | | | | | | **755.69** | **666.84** |
| | **Others** | | | | | | | | | | | | | |
| (15) | Underinsured Motorist (UM, Major Coverage 0) | 4.55 | | | 0.42 | 4.97 | 4.04 | 1.061 | 1.040 | 1.040 | 1.040 | 0.975 | 5.78 | 4.70 |
| (16) | Collision (CL,Major Coverage 30) | 243.86 | | | 22.56 | 266.42 | 258.58 | 1.038 | 1.025 | 1.025 | 1.025 | 0.975 | 290.28 | 281.75 |
| (17) | Comprehensive (COMP, Major Coverage 80) | 127.84 | | 79.61 | 11.83 | 219.28 | 211.61 | 1.099 | 1.065 | 1.065 | 1.065 | 1.000 | 291.12 | 280.94 |
| (18) | All Perils (Major Coverage 40) | 401.06 | | 90.00 | 37.10 | 528.16 | 510.38 | 1.061 | 1.040 | 1.040 | 1.040 | 0.983 | 619.59 | 598.73 |
| (19) | Specified Perils (Major Coverage 20) | 46.61 | | 26.73 | 4.31 | 77.66 | 75.04 | 1.107 | 1.070 | 1.070 | 1.070 | 1.000 | 105.30 | 101.74 |
| | **Full Package (AB+TPL+UM+CL+COMP)** | **948.41** | **42.51** | **79.61** | **87.73** | **1,158.26** | **1,069.90** | | | | | | **1,432.01** | **1,318.31** |

Note:
Past and Future trends are from AIRB Annual Review
COVID 19 factors are assumed to be as same as current model

**Alberta**
**Automobile Accident Insurance Benefits**
**Summary of Cost by Coverages** **Model 4**
Policies Issued on Policy Year 2022 & Trended to Jan 1, 2023

| | | At July 01, 2018 Level | | | | All Claim Related | | Trending Factors | | | | | Undiscounted | Discounted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Undisc. Loss Cost | Health Levy | CAT | 9.25% ULAE | Undisc. Loss Cost | Disc. Loss Cost | 2020 Jan.01 Factor | 2021 Jan.01 Factor | 2022 Jan.01 Factor | 2023 Jan.01 Factor | Covid 19 Factor | PY2022 Loss Cost | PY2022 Loss Cost |
| | **Accident Benefits (AB)** | | | | | | | | | | | | | |
| (1) | Funeral (KOL 30) | 0.31 | | | 0.03 | 0.34 | 0.32 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.47 | 0.45 |
| (2) | Death Benefits (KOL 32) | 0.85 | | | 0.08 | 0.93 | 0.88 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 1.31 | 1.23 |
| | Medical/Rehabilitation (KOL 31) | 43.93 | | | 4.06 | 47.99 | 45.27 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 67.55 | 63.71 |
| (3) | Medical/Rehabilitation expenses | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (4) | Certified attendant care or homecare expenses | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| | Disability Income (KOL 34) | 12.61 | | | 1.17 | 13.77 | 12.99 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 19.39 | 18.29 |
| (5) | Earners IRB | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (6) | Non-earners loss of earning capacity | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (7) | Diminished quality of life | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (8) | Housekeeping | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.00 | 0.00 |
| (9) | Supplementary Benefits (KOL 37) | 0.01 | | | 0.00 | 0.01 | 0.01 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.01 | 0.01 |
| (10) | Uninsured Motorist (KOL 39) | 0.27 | | | 0.02 | 0.29 | 0.28 | 1.130 | 1.085 | 1.085 | 1.085 | 0.975 | 0.41 | 0.39 |
| | **Total Accident Benefits** | **57.97** | **0.00** | **0.00** | **5.36** | **63.34** | **59.74** | | | | | | **89.14** | **84.08** |
| | **Third Party Liability (TPL)** | | | | | | | | | | | | | |
| | Tort Bodily Injury (KOL 1,2) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 0.00 | 0.00 |
| (11) | BI in Alberta | 309.73 | 42.51 | | 28.65 | 380.88 | 327.55 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 507.06 | 436.05 |
| (12) | BI out of Alberta | 32.29 | | | 2.99 | 35.28 | 30.34 | 1.115 | 1.070 | 1.070 | 1.070 | 0.975 | 46.96 | 40.39 |
| | Property Damage (KOL 9) | 0.00 | | | 0.00 | 0.00 | 0.00 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 0.00 | 0.00 |
| (13) | DCPD | 147.77 | | | 13.67 | 161.44 | 154.41 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 168.31 | 160.98 |
| (14) | Other PD incl. Out of Alberta | 6.74 | | | 0.62 | 7.37 | 7.05 | 1.023 | 1.015 | 1.015 | 1.015 | 0.975 | 7.68 | 7.35 |
| | **Total Third Party Liability** | **496.53** | **42.51** | **0.00** | **45.93** | **584.97** | **519.34** | | | | | | **730.01** | **644.76** |
| | **Others** | | | | | | | | | | | | | |
| (15) | Underinsured Motorist (UM, Major Coverage 0) | 4.55 | | | 0.42 | 4.97 | 4.04 | 1.061 | 1.040 | 1.040 | 1.040 | 0.975 | 5.78 | 4.70 |
| (16) | Collision (CL,Major Coverage 30) | 243.86 | | | 22.56 | 266.42 | 258.58 | 1.038 | 1.025 | 1.025 | 1.025 | 0.975 | 290.28 | 281.75 |
| (17) | Comprehensive (COMP, Major Coverage 80) | 127.84 | | 79.61 | 11.83 | 219.28 | 211.61 | 1.099 | 1.065 | 1.065 | 1.065 | 1.000 | 291.12 | 280.94 |
| (18) | All Perils (Major Coverage 40) | 401.06 | | 90.00 | 37.10 | 528.16 | 510.38 | 1.061 | 1.040 | 1.040 | 1.040 | 0.983 | 619.59 | 598.73 |
| (19) | Specified Perils (Major Coverage 20) | 46.61 | | 26.73 | 4.31 | 77.66 | 75.04 | 1.107 | 1.070 | 1.070 | 1.070 | 1.000 | 105.30 | 101.74 |
| | **Full Package (AB+TPL+UM+CL+COMP)** | **930.76** | **42.51** | **79.61** | **86.09** | **1,138.97** | **1,053.31** | | | | | | **1,406.34** | **1,296.23** |

Note:
Past and Future trends are from AIRB Annual Review
COVID 19 factors are assumed to be as same as current model

**Alberta**
**Automobile Accident Insurance Benefits**
**Target Premium Summary by Model**

| Full Package[1] | % of DWP[2] | Distribution of Total Expenses | Current($) | Model 1($) | Model 2($) | Model 3($) | Model 4($) |
|---|---|---|---|---|---|---|---|
| Total Claims | 66.8% | | 1,371.14 | 992.70 | 1,001.23 | 1,318.31 | 1,296.23 |
| Total Expenses | 26.2% | 100.0% | | | | | |
| - Commissions | 12.6% | 48.0% | 258.22 | 193.96 | 195.41 | 249.28 | 245.53 |
| - Taxes | 3.8% | 14.5% | 78.00 | 58.59 | 59.03 | 75.30 | 74.17 |
| - Other Acquisition Expenses | 2.6% | 9.8% | 52.75 | 39.62 | 39.92 | 50.93 | 50.16 |
| - General Expenses[4] | 7.3% | 27.7% | 149.02 | 149.02 | 149.02 | 149.02 | 149.02 |
| Total Profit[3] | 7.0% | | 143.70 | 107.93 | 108.73 | 138.71 | 136.62 |
| Target Premium | 100.0% | | 2,052.82 | 1,541.82 | 1,553.34 | 1,981.54 | 1,951.72 |
| Mar 2020 Premium | | | 1,702.71 | | | | |
| Savings(+)/Inadequate(-)($) | | | (350.11) | 160.89 | 149.37 | (278.83) | (249.01) |
| Savings(+)/Inadequate(-)(%)[5] | | | -20.6% | 9.4% | 8.8% | -16.4% | -14.6% |

Notes:
(1) Full package = TPL + AB + Underinsured Motorists + Collision + Comprehensive
(2) Premium cost allocation is from Industry Expense Report (Bulletin No: 2019-06)
(3) Target Profit is 7%. It is based on March 27, 2020 Bulletin:01-2020 from Automobile Insurance Rate Board.
(4) General expenses were determined as 7.3% of the target premium of the current model
(5) = Savings or Inadequate(-)($) / Mar 2020 Premium

**Current Model**

For Policy Year 2022
Location: Alberta

**Per Vehicle**

| **Full Package** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims | 72.7% | 1,491.53 | 0.9193 | 1,371.14 | 66.8% |
| Commissions | 12.6% | 258.22 | 1.0000 | 258.22 | 12.6% |
| Taxes | 3.8% | 78.00 | 1.0000 | 78.00 | 3.8% |
| Other Acquisition Expenses | 2.6% | 52.75 | 1.0000 | 52.75 | 2.6% |
| General Expenses | 7.3% | 149.02 | 1.0000 | 149.02 | 7.3% |
| Total Claims & Expenses | 98.9% | 2,029.52 | | 1,909.12 | 93.0% |
| | | | Target Profit | 143.70 | 7.0% |
| | | | Target Premium | 2,052.82 | 100.0% |

| | | |
|---|---|---|
| Mar 2020 GISA Premium | 1,702.71 | |
| Savings(+)/Inadequate(-) by | (350.11) | -20.6% |

**Model 1**

For Policy Year 2022
Location: Alberta

**Per Vehicle**

| **Full Package** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims | 67.3% | 1,037.27 | 0.9570 | 992.70 | 64.4% |
| Commissions | 12.6% | 193.96 | 1.0000 | 193.96 | 12.6% |
| Taxes | 3.8% | 58.59 | 1.0000 | 58.59 | 3.8% |
| Other Acquisition Expenses | 2.6% | 39.62 | 1.0000 | 39.62 | 2.6% |
| General Expenses[1] | 9.7% | 149.02 | 1.0000 | 149.02 | 9.7% |
| Total Claims & Expenses | 95.9% | 1,478.46 | | 1,433.89 | 93.0% |
| | | | Target Profit | 107.93 | 7.0% |
| | | | Target Premium | 1,541.82 | 100.0% |

| | | |
|---|---|---|
| Mar 2020 GISA Premium | 1,702.71 | |
| Savings(+)/Inadequate(-) by | 160.89 | 9.4% |

(1) General expense per vehicle is assumed to be the same as current model

**Model 2**

For Policy Year 2022
Location: Alberta

**Per Vehicle**

| **Full Package** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims | 67.4% | 1,046.19 | 0.9570 | 1,001.23 | 64.5% |
| Commissions | 12.6% | 195.41 | 1.0000 | 195.41 | 12.6% |
| Taxes | 3.8% | 59.03 | 1.0000 | 59.03 | 3.8% |
| Other Acquisition Expenses | 2.6% | 39.92 | 1.0000 | 39.92 | 2.6% |
| General Expenses | 9.6% | 149.02 | 1.0000 | 149.02 | 9.6% |
| Total Claims & Expenses | 95.9% | 1,489.56 | | 1,444.61 | 93.0% |
| | | | Target Profit | 108.73 | 7.0% |
| | | | Target Premium | 1,553.34 | 100.0% |

| | | |
|---|---|---|
| Mar 2020 GISA Premium | 1,702.71 | |
| Savings(+)/Inadequate(-) by | 149.37 | 8.8% |

(1) General expense per vehicle is assumed to be the same as current model

**Model 3**

For Policy Year 2022
Location: Alberta

**Per Vehicle**

| **Full Package** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims | 72.3% | 1,432.01 | 0.9206 | 1,318.31 | 66.5% |
| Commissions | 12.6% | 249.28 | 1.0000 | 249.28 | 12.6% |
| Taxes | 3.8% | 75.30 | 1.0000 | 75.30 | 3.8% |
| Other Acquisition Expenses | 2.6% | 50.93 | 1.0000 | 50.93 | 2.6% |
| General Expenses | 7.5% | 149.02 | 1.0000 | 149.02 | 7.5% |
| Total Claims & Expenses | 98.7% | 1,956.53 | | 1,842.83 | 93.0% |
| | | | Target Profit | 138.71 | 7.0% |
| | | | Target Premium | 1,981.54 | 100.0% |
| | | | Mar 2020 GISA Premium | 1,702.71 | |
| | | | Savings(+)/Inadequate(-) by | (278.83) | -16.4% |

(1) General expense per vehicle is assumed to be the same as current model

**Model 4**

For Policy Year 2022
Location: Alberta

**Per Vehicle**

| **Full Package** | % Of Target Premium | Undiscounted | Factor | Discounted | % Of Target Premium |
|---|---|---|---|---|---|
| Claims | 72.1% | 1,406.34 | 0.9217 | 1,296.23 | 66.4% |
| Commissions | 12.6% | 245.53 | 1.0000 | 245.53 | 12.6% |
| Taxes | 3.8% | 74.17 | 1.0000 | 74.17 | 3.8% |
| Other Acquisition Expenses | 2.6% | 50.16 | 1.0000 | 50.16 | 2.6% |
| General Expenses | 7.6% | 149.02 | 1.0000 | 149.02 | 7.6% |
| Total Claims & Expenses | 98.6% | 1,925.20 | | 1,815.10 | 93.0% |
| | | | Target Profit | 136.62 | 7.0% |
| | | | Target Premium | 1,951.72 | 100.0% |
| | | | Mar 2020 GISA Premium | 1,702.71 | |
| | | | Savings(+)/Inadequate(-) by | (249.01) | -14.6% |

(1) General expense per vehicle is assumed to be the same as current model

# XIII Appendices

# A. Appendix 1 – Sources


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# B. Appendix 2 – Public Submissions

## Survey questionnaire

The Alberta Automobile Insurance Review Committee was formed by the Alberta Government to examine the current Automobile Insurance System. It is important that the Committee receive your personal feedback on this important issue.

It will take approximately 10 minutes to answer this survey. Please select the most accurate response for each of the ten questions that follow, according to your assessment of each. When the information refers to current system, this refers to as it is today.

*The personal information is being collected and used pursuant to section 33(c) and section 39(1)(a) of the Freedom of Information and Protection of Privacy Act (FOIP). Questions about the FOIP Act or regarding the collection, use, or disclosure of this information, may be directed to the Information Access and Privacy office at 780-427-9687.*

**1**: How old are you?

- Under 18
- Between 18 and 24
- Between 25 and 44
- Between 45 and 64
- 65 or over
- Prefer not to say

**2**: Are you…

- Male
- Female
- Non-binary/third gender
- Prefer not to say

**3**: What are the first three digits of your postal code?

_____

**4**: Do you have a private passenger vehicle?

By this, we mean a passenger vehicle which you personally use, and you (or a member of your household) are responsible for obtaining automobile insurance

- Yes
- No

**5**: Please indicate if you or any member of your household are currently employed in any of the following professions. (Select all that apply)

- Medical community or health care practitioner
- Legal community
- Insurance industry
- None of the above

**6**: In the past 2 years, have you...

| | Yes | No | Don't know | Prefer not to say |
|---|---|---|---|---|
| Purchased an auto insurance policy? | • | • | • | • |
| Renewed an existing insurance policy with the same company or agent? | • | • | • | • |
| Sought competitive quotes for automobile insurance? | • | • | • | • |
| Changed automobile insurance providers to obtain a better rate? | • | • | • | • |
| Had a claim made against you on your auto insurance? | • | • | • | • |
| Made a collision claim where you were at fault? | • | • | • | • |
| Made a claim against a responsible driver who was at fault? | • | • | • | • |
| Been denied automobile insurance coverage? | • | • | • | • |

**7**: Have you ever been injured in an automobile accident?

- Yes
- No
- Don't know
- Prefer not to say

Please indicate how much you agree or disagree with the following statements:

**8**: My automobile insurance premiums are fair and reasonable.

| Strongly agree | Agree | Neither agree or disagree | Disagree | Strongly disagree | Don't know |
|---|---|---|---|---|---|
| • | • | • | • | • | • |

**9**: I understand what my automobile insurance covers and what it doesn't.

| Strongly agree | Agree | Neither agree or disagree | Disagree | Strongly disagree | Don't know |
|---|---|---|---|---|---|
| • | • | • | • | • | • |

Under Alberta's current automobile insurance system:

- Medical benefits (called "accident benefits") are available to anyone injured in a collision regardless of fault, but those benefits are limited to $50,000 and are limited for two years following the collision (accident)

- Damages as a result of the actions of an at-fault driver, can either be negotiated or resolved directly with the at-fault driver's insurer, or the person suffering damages can sue the at-fault driver to recover those damages from the insurer.

- When people are injured in collisions, those not at-fault can claim against the at-fault driver for care costs that are not covered by the publicly-funded health system, as well as for lost income and pain and suffering damages.

- At-fault drivers are limited to claiming the no-fault medical and disability benefits available to them under their automobile policies (Accident Benefits). Seriously or catastrophically injured Albertans who are at-fault may not have access to the care that they need.

In developing reforms in auto insurance in Alberta, there will be trade-offs. Please indicate your preferences of various elements of models below.

**10**: In a situation where you were injured as a result of the actions of an at-fault driver, which would be more important to you? (select one.)

- The right to sue the at-fault driver for a cash settlement.

- Having coverage that provides immediate access to medical treatment and rehabilitation as well income replacement.

- Don't know / no preference

Alberta's current automobile insurance system focuses on the ability to make monetary claims against at-fault drivers. As a result, litigation is one of the main cost drivers in the system: hiring legal representatives and medical experts to support parties' interests is expensive and time consuming. Settlement costs, including interest, pain and suffering damages, and other damages, add cost pressure to the system. This, in turn, results in higher insurance rates for Albertans.

**11**: Please indicate which of the following is more important to you:

- The right to sue an at-fault driver for a cash settlement; or
- Access to more affordable automobile insurance rates
- Don't know / no preference

**12**: If you were injured in an automobile collision, what would be more important to you:

- The right to sue with the potential to receive a cash settlement at some point in the future that you would use to pay for all treatment and rehabilitation that you may require.

- No right to sue regardless of fault, however all medically required treatment and rehabilitation with income replacement are provided as long as required, potentially for the rest of your life.

- Don't know / no preference

**13**: Would you be willing to give up your right to sue an at-fault driver for a cash settlement if it meant that:

a) you received the treatment and rehabilitation you needed to get better;

b) you received the income replacement you needed to help pay your bills while you recover; and

c) you could pay less for your automobile insurance.

- Yes
- No
- Don't know

**14**: Would you be in favor of giving up your right to sue an at-fault driver for a cash settlement for pain and suffering if it meant that all Albertans suffering serious permanent injuries (such as loss of a limb, loss of eyesight, serious brain or spinal cord injuries) would be eligible to receive a one-time, lump-sum permanent impairment benefit?

- Yes
- No
- Don't know / no preference

The vast majority of collisions do not occur intentionally. They happen because drivers make mistakes, errors in judgment, or due to weather conditions. In today's environment drivers who are at-fault are limited to claiming the no-fault Accident Benefits available to them under their automobile policies.

As a result, Albertans who suffer a serious or catastrophic injury (such as severe brain injury or spinal cord injury), and are deemed at-fault for the accident, may not have access to the care or income support that they need. At-fault drivers are also subject to penalties under law and face higher insurance premiums.

**15**: If a driver is at-fault in a collision, how should they be held responsible for their actions:

- By giving them less access to treatment, rehabilitation, and income replacement benefits than would be available to injured Albertans who are not at-fault.

- By making them subject to penalties which could include fines, convictions and/or driving restrictions along with higher insurance rates.

- Don't know / no preference

One of the cost pressures in the current automobile insurance system is vehicle repair and replacement.

On average, Albertans drive some of the most expensive vehicles in Canada. In addition, as vehicles have become more automated and have additional technology and safety features, they also tend to be much more expensive to repair after a collision. For example: A replacement bumper that may have cost $500 a few years ago may now cost several thousand dollars because repair or replacement includes sensors and cameras. Headlights that once cost $30 to replace can now exceed $1,700.

**16**: Please provide us with your ideas to help reduce the costs of vehicle repair or replacement (caused by collisions, theft, vandalism, weather, etc.)

Max 250 characters.

---

**17**: Do you have any other comments or suggestions that you would like to share with the committee on automobile insurance reform? Max 500 characters.

---

## Letter submitting queries to service providers

**Subject:** Alberta Automobile Insurance Advisory Committee

## Automobile Insurance Survey

The Alberta Automobile Insurance Advisory Committee (the Committee) invites submissions for automobile insurance reform for Albertans. The Committee is seeking your input and feedback on a series of questions related to automobile insurance in Alberta. Responses to the survey questions will be used as one source of information that will assist in the formulation of the recommendations by the Committee: **https://extranet.gov.ab.ca/opinio6/s?s=AutoInsurance**

In addition to the online survey, your organization may also choose to make a written submission to the Committee. Submissions may be sent to auto.advisorycommittee@gov.ab.ca. We request that you provide your written submissions during the same timeframe as the survey, from February 18 – March 6, 2020.

As part of your written submission, the Committee is seeking input on the following issues:

1. How to optimize treatment and claims outcomes for traffic injured;
2. How to reduce the timelines for securing treatment and claims compensation;
3. How to optimize accessible and affordable insurance for Alberta motorists;
4. How to satisfy Alberta motorists there is fairness in mandatory auto insurance pricing;
5. How to ensure long term viability and sustainability of the automobile insurance system;
6. How and what recommendations would you make to reduce costs in the current system.

Please provide contact information for your organization in the event the committee requires clarification or further information on your submission.

### FOIPP Disclosure

The information provided to the Advisory Committee as collected by Alberta Treasury Board and Finance for the survey and any written submissions is being collected, used and disclosed under the authority of Alberta's *Freedom of Information and Protection of Privacy Act* sections 33-40. The information you provide will be used to inform support for elements of a proposed automobile insurance reform report. All submissions received will become the property of Alberta Treasury Board and Finance.

If you have questions about the collection of your personal information, please contact: auto.advisorycommittee@gov.ab.ca (mailto: auto.advisorycommittee@gov.ab.ca).

The Government of Alberta reserves the right to use and disclose information, as applicable from any submission in accordance with the provisions of the *Freedom of Information and Protection of Privacy Act.*

# Leger Report

# Report

## Treasury Board and Finance

Analysis of Automobile Insurance Survey

April 9, 2020

*We know Canadians*

# BACKGROUND & METHODOLOGY

**Online Survey**

**February 18 – March 6, 2020**

# Automobile Insurance Reform

## Background

An expert advisory committee has been tasked with reviewing Alberta's automobile insurance system to reduce costs for consumers and ensure the system is sustainable. As part of the review, the committee sought input from Albertans, service providers and other stakeholders through online or written submissions.

The Government of Alberta contracted Leger Marketing to summarize feedback from Albertans, service providers and other stakeholders.

## Online Survey Methodology

- The online survey was accessible between February 18 and March 6, 2020 on Alberta.ca.
- As is common with public engagement surveys, participation was voluntary and self-selected (i.e., does not represent a random sample of the Alberta population, but instead focuses on reaching as many members of the population as possible to ensure a diverse range of views is represented).

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# SUMMARY

**Online Survey**

**February 18 – March 6, 2020**

# Summary

**A total of 45,571 online surveys were submitted between February 18 and March 6, 2020.**

Within this total, there were a significant number (14,552) of 'short' survey submissions, completed in 20 seconds or less, and without responses to either of the survey's two open-ended questions.

It is Leger's opinion that these responses represent an automated attempt to amplify or skew a particular view point for the committee's attention, and do not represent legitimate feedback from individual Albertans.

The characteristics of these responses, and evidence of survey interference is discussed in the section 'Data Quality', and the distribution of excluded submissions is presented in the Appendix for reference.

# Summary

The following results summary is based on the 31,019 survey submissions received between February 18 and March 6, excluding the 'short' survey submissions.

**Quantitative survey results indicate:**

- Most Albertans (63%) do not feel their insurance premiums are fair and reasonable.
- Having coverage that provides immediate access to medical treatment and rehabilitation as well income replacement is preferred over the right to sue for a cash settlement.
- One-third (33%) of Albertans would be willing to give up their right to sue an at-fault driver for a cash settlement for pain and suffering to ensure that all Albertans suffering serious permanent injuries would be eligible to receive a one-time, lump-sum permanent impairment benefit.
- Most (77%) of Albertans feel that at-fault drivers should be subject to penalties which could include fines, convictions and/or driving restrictions along with higher insurance rates, rather than giving them less access to treatment, rehabilitation, and income replacement benefits.

# Summary

Qualitative Survey Results:

- An analysis of the 26,316 responses to the survey's two open-ended questions surfaced several common and salient themes. Analysis was completed using a combination of Natural Language Processing (software categorization) and Leger's coding team.

- On ideas to reduce the cost of repairs and replacements, common and salient themes include:
    - Increasing premiums for expensive vehicles, and those with poor driving records;
    - Decreasing rates in general;
    - Lowering repair costs through the use of used/aftermarket parts;
    - Incentivizing the insurance of older, smaller, or more standard vehicles;
    - Evaluating or inspecting vehicle condition; and
    - Increasing deductibles amounts.

- Among additional comments for the committee to consider, common and salient themes include:
    - Making insurance more affordable;
    - Incentivizing good drivers with clean records, and penalizing those with poor driving's records;
    - Considering the hardships of ordinary Albertans;
    - Preference for the right to sue;
    - Greater focus on rehabilitation; and
    - Regulating insurance companies or having caps that limit profit.

A dataset of all responses to open-end questions is attached, allowing the committee to further explore specific suggestions and themes.

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# DETAILED RESULTS

**Online Survey**

**February 18 – March 6, 2020**

# Online Survey: Respondent Profile

- Respondent profiles are shown in the table on the right, relative to the target audience (Albertans aged 18 and over)
- Efforts to promote public participation resulted in substantial coverage of the Alberta population and a diverse mix of age, gender and geographic regional groups.

| Age | Survey Responses (n=31,019) | Alberta Population (18+) |
|---|---|---|
| Under 18 | 1% | - |
| Between 18 and 24 | 6% | 11% |
| Between 25 and 44 | 49% | 39% |
| Between 45 and 64 | 33% | 34% |
| 65 or over | 10% | 16% |
| Prefer not to say | 2% | - |

| Gender | Survey Responses (n=31,019) | Alberta Population (18+) |
|---|---|---|
| Male | 47% | 50% |
| Female | 50% | 50% |
| Prefer not to say | 2% | - |

| Region | Survey Responses (n=31,019) | Alberta Population (18+) |
|---|---|---|
| Calgary | 29% | 31% |
| Edmonton | 22% | 24% |
| Other Alberta | 46% | 46% |

Note: population estimates are from Statistics Canada 2016 Census

# Online Survey: Respondent Profile

| Do you have a private passenger vehicle? | Survey Responses (n=31,019) |
|---|---|
| Yes | 98% |
| No | 2% |

| Profession | Survey Responses (n=31,019) |
|---|---|
| Medical community or health care practitioner | 11% |
| Legal community | 6% |
| Insurance industry | 8% |
| None of the above | 77% |

Do you have a private passenger vehicle?
Please indicate if you or any member of your household are currently employed in any of the following professions (select all that apply).

# Online Survey: Respondent Profile

| In the past 2 years, have you… | Survey Responses (n=31,019) |
|---|---|
| Purchased an auto insurance policy | 71% |
| Renewed an existing insurance policy with the same company or agent | 91% |
| Sought competitive quotes for automobile insurance | 65% |
| Changed automobile insurance providers to obtain a better rate | 28% |
| Had a claim made against you on your auto insurance | 10% |
| Made a collision claim where you were at fault | 7% |
| Made a claim against a responsible driver who was at fault | 17% |
| Been denied automobile insurance coverage | 2% |

| Have you ever been injured in an automobile accident? | Survey Responses (n=31,019) |
|---|---|
| Yes | 32% |
| No | 66% |
| Don't know | 1% |
| Prefer not to say | 2% |

# Online Survey: Detailed Results

Leger

Please indicate how much you agree or disagree with the following statements:

| My automobile insurance premiums are fair and reasonable | Survey Responses (n=31,019) |
|---|---|
| TOTAL AGREE | 21% |
| Strongly agree | 6% |
| Agree | 15% |
| NEITHER | 14% |
| TOTAL DISAGREE | 63% |
| Disagree | 33% |
| Strongly disagree | 30% |
| Don't know | 2% |

| I understand what my automobile insurance covers and what it doesn't | Survey Responses (n=31,019) |
|---|---|
| TOTAL AGREE | 69% |
| Strongly agree | 21% |
| Agree | 49% |
| NEITHER | 14% |
| TOTAL DISAGREE | 15% |
| Disagree | 12% |
| Strongly disagree | 4% |
| Don't know | 2% |

# Online Survey: Detailed Results

Under Alberta's current automobile insurance system:

- Medical benefits (called "accident benefits") are available to anyone injured in a collision regardless of fault, but those benefits are limited to $50,000 and are limited for two years following the collision (accident)
- Damages as a result of the actions of an at-fault driver, can either be negotiated or resolved directly with the at-fault driver's insurer, or the person suffering damages can sue the at-fault driver to recover those damages from the insurer.
- When people are injured in collisions, those not at-fault can claim against the at-fault driver for care costs that are not covered by the publicly-funded health system, as well as for lost income and pain and suffering damages.
- At-fault drivers are limited to claiming the no-fault medical and disability benefits available to them under their automobile policies (Accident Benefits). Seriously or catastrophically injured Albertans who are at-fault may not have access to the care that they need.

In developing reforms in auto insurance in Alberta, there will be trade-offs. Please indicate your preferences of various elements of models below.

| In a situation where you were injured as a result of the actions of an at-fault driver, which would be more important to you? | Survey Responses (n=31,019) |
|---|---|
| The right to sue the at-fault driver for a cash settlement | 27% |
| Having coverage that provides immediate access to medical treatment and rehabilitation as well as income replacement | 64% |
| Don't know/no preference | 7% |
| No response | 2% |

# Online Survey: Detailed Results

Alberta's current automobile insurance system focuses on the ability to make monetary claims against at-fault drivers. As a result, litigation is one of the main cost drivers in the system: hiring legal representatives and medical experts to support parties' interests is expensive and time consuming. Settlement costs, including interest, pain and suffering damages, and other damages, add cost pressure to the system. This, in turn, results in higher insurance rates for Albertans.

| Please indicate which of the following is more important to you: | Survey Responses (n=31,019) |
|---|---|
| The right to sue an at-fault driver for a cash settlement; or | 30% |
| Access to more affordable automobile insurance rates | 56% |
| Don't know/no preference | 7% |
| No response | 6% |

# Online Survey: Detailed Results

Leger

Alberta's current automobile insurance system focuses on the ability to make monetary claims against at-fault drivers. As a result, litigation is one of the main cost drivers in the system: hiring legal representatives and medical experts to support parties' interests is expensive and time consuming. Settlement costs, including interest, pain and suffering damages, and other damages, add cost pressure to the system. This, in turn, results in higher insurance rates for Albertans.

| If you were injured in an automobile collision, what would be more important to you: | Survey Responses (n=31,019) |
|---|---|
| The right to sue with the potential to receive a cash settlement at some point in the future that you would use to pay for all treatment and rehabilitation that you may require. | 36% |
| No right to sue regardless of fault, however all medically required treatment and rehabilitation with income replacement are provided as long as required, potentially for the rest of your life. | 48% |
| Don't know/no preference | 9% |
| No response | 6% |

# Online Survey: Detailed Results

Alberta's current automobile insurance system focuses on the ability to make monetary claims against at-fault drivers. As a result, litigation is one of the main cost drivers in the system: hiring legal representatives and medical experts to support parties' interests is expensive and time consuming. Settlement costs, including interest, pain and suffering damages, and other damages, add cost pressure to the system. This, in turn, results in higher insurance rates for Albertans.

**Would you be willing to give up your right to sue an at-fault driver for a cash settlement if it meant that**:

a) you received the treatment and rehabilitation you needed to get better;
b) you received the income replacement you needed to help pay your bills while you recover; and
c) you could pay less for your automobile insurance.

| | Survey Responses (n=31,019) |
|---|---|
| Yes | 55% |
| No | 29% |
| Don't know/no preference | 9% |
| No response | 6% |

# Online Survey: Detailed Results

Leger

Alberta's current automobile insurance system focuses on the ability to make monetary claims against at-fault drivers. As a result, litigation is one of the main cost drivers in the system: hiring legal representatives and medical experts to support parties' interests is expensive and time consuming. Settlement costs, including interest, pain and suffering damages, and other damages, add cost pressure to the system. This, in turn, results in higher insurance rates for Albertans.

**Would you be in favor of giving up your right to sue an at-fault driver for a cash settlement for pain and suffering if it meant that all Albertans suffering serious permanent injuries (such as loss of a limb, loss of eyesight, serious brain or spinal cord injuries) would be eligible to receive a one-time, lump-sum permanent impairment benefit?**

| | Survey Responses (n=31,019) |
|---|---|
| Yes | 33% |
| No | 42% |
| Don't know/no preference | 19% |
| No response | 6% |

# Online Survey: Detailed Results

The vast majority of collisions do not occur intentionally. They happen because drivers make mistakes, errors in judgment, or due to weather conditions. In today's environment drivers who are at-fault are limited to claiming the no-fault Accident Benefits available to them under their automobile policies.

As a result, Albertans who suffer a serious or catastrophic injury (such as severe brain injury or spinal cord injury), and are deemed at-fault for the accident, may not have access to the care or income support that they need. At-fault drivers are also subject to penalties under law and face higher insurance premiums.

| If a driver is at-fault in a collision, how should they be held responsible for their actions: | Survey Responses (n=31,019) |
|---|---|
| By giving them less access to treatment, rehabilitation, and income replacement benefits than would be available to injured Albertans who are not at-fault | 3% |
| By making them subject to penalties which could include fines, convictions and/or driving restrictions along with higher insurance rates | 77% |
| Don't know/no preference | 13% |
| No response | 7% |

# QUALITATIVE ANALYSIS

**Online Survey**

**February 18 – March 6, 2020**

# Qualitative Analysis

In total, 26,316 responses were received to the online survey's two open-ended questions:

| | Responses |
|---|---|
| One of the cost pressures in the current automobile insurance system is vehicle repair and replacement.<br><br>On average, Albertans drive some of the most expensive vehicles in Canada. In addition, as vehicles have become more automated and have additional technology and safety features, they also tend to be much more expensive to repair after a collision. For example: A replacement bumper that may have cost $500 a few years ago may now cost several thousand dollars because repair or replacement includes sensors and cameras. Headlights that once cost $30 to replace can now exceed $1,700.<br><br>**Please provide us with your ideas to help reduce the costs of vehicle repair or replacement (caused by collisions, theft, vandalism, weather, etc.)** | 14,148 |
| **Do you have any other comments or suggestions that you would like to share with the committee on automobile insurance reform?** | 12,168 |

Responses were analyzed using Ascribe text analysis software, and aided by Leger's qualitative coding team.

# Qualitative Analysis: Methodology

Ascribe text analysis software automatically analyzes, categorizes and visualizes themes and opinions from verbatim comments. Ascribe is fueled by Natural Language Processing (NLP), a type of Artificial Intelligence (AI), referring to the ability of the software to understand human language as it is spoken and written. It mines text to look for patterns and adjusts program actions accordingly.

While software continuously improves, human guidance is still required to ensure quality results. Leger's coding team refined the analysis by suppressing extraneous information (i.e. irrelevant to the topic or too general to be useful) and improving the categorization of the vast quantity of text into meaningful themes and subthemes. For example, broad themes such as "automobiles" and "insurance" are not helpful in understanding public opinion on automobile insurance reform.

The process in Ascribe begins with the software examining each verbatim comment and building topics based on its algorithm and based on rulesets that can modify or alter some of the parameters of this algorithm. Essentially, the verbatim comments are compared to identify common expressions and extracts (most used words and expressions). These expressions and extracts are used to define the topics.

# Qualitative Analysis: Interpretation

### Measures Used in this Analysis

Two measures are used in this text analysis: mentions and salience. In combination, these measures describe both the frequency with which topics are mentioned as well as the importance of the topics to human readers.

Leger advises readers of this report to take both of these measures into account, and to pay particular attention to themes that are frequently mentioned and salient.

### Mentions (Frequency)

This refers to the frequency with which a topic is mentioned. Traditional text analysis has focused on this kind of measure, the interpretation being that the more a topic is mentioned the more important it is.

### Salience (Importance)

This refers to the importance of the topic, taking into account the types of words that are used (e.g., nouns, verbs), placement within the comment, etc. Essentially, salience measures the extent to which it is predicted that humans would place importance on, or pay attention to, the topic.

### Themes

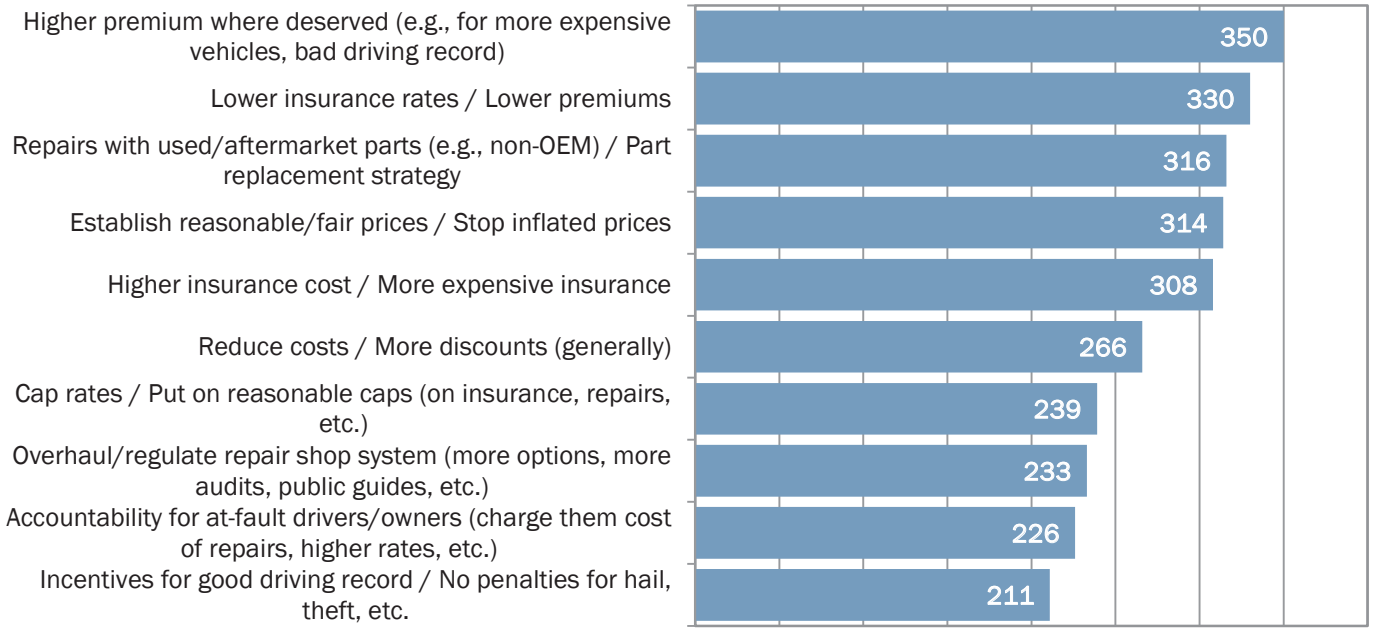
The themes were identified by linking key words and expressions together to represent common ideas that relate to the questions that were asked. Leger's coding team focused on identifying specific, solution-oriented themes, as opposed to broader themes which are more vague and less actionable. This approach, as well as the focus on salience in addition to frequency, leads to a long list of themes that each tend to have lower frequency (fewer mentions) than for a more broadly focused approach.

# Ideas to Reduce Costs Mentions (Frequency)

Q16: Please provide us with your ideas to help reduce the costs of vehicle repair or replacement (caused by collisions, theft, vandalism, weather, etc.)

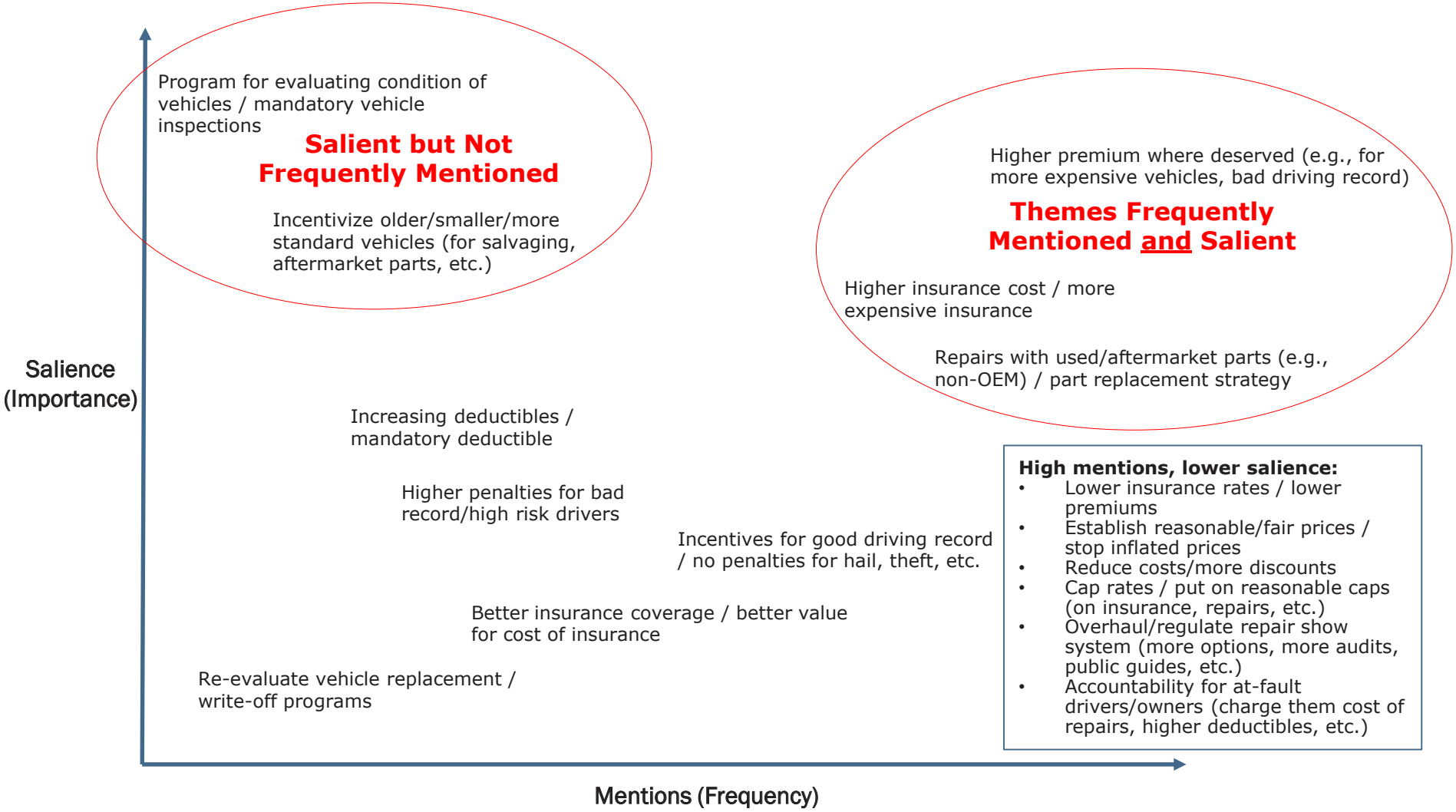
A diverse range of responses were provided, included many comments that were off-topic. The most frequently mentioned themes that relate to the question asked are charging higher premiums where deserved, and lowering insurance rates / premiums, as shown below. Charging higher premiums where deserved is also highly salient, as shown on the following page. Other themes that are frequently mentioned and have relatively high salience are insurance costs being high / expensive, and repairs using used or aftermarket parts / part replacement strategies.

## Top 10 Most Frequently Mentioned Themes (ordered by number of respondents)



# Ideas to Reduce Costs
# Mentions vs. Salience

Q16: Please provide us with your ideas to help reduce the costs of vehicle repair or replacement (caused by collisions, theft, vandalism, weather, etc.)



# Ideas to Reduce Costs
# By Responses to Q13

The following page shows a comparison of the most frequently mentioned themes based on whether Albertans would be willing to give up their right to sue an at-fault driver for a cash settlement if it meant that: a) they received the treatment and rehabilitation they needed to get better; b) they received the income replacement they needed to help pay their bills while in recovery; and c) they could pay less for their automobile insurance.

The comparison shows that the theme of repairs with used or aftermarket parts / repair strategy is the most dominant theme among Albertans who would be willing to give up their right to sue, while it is only the eighth most mentioned theme for those who would not be willing to give up that right.

Accountability for at-fault drivers / owners is the fifth most frequently mentioned theme among those who would not give up the right to sue, while it is ranked 10$^{th}$ among those who would give up that right.

Most of the other top mentioned themes are ranked similarly by both groups.

# Ideas to Reduce Costs
# By Responses to Q13

Q16: Please provide us with your ideas to help reduce the costs of vehicle repair or replacement (caused by collisions, theft, vandalism, weather, etc.)
Q13: Would you be willing to give up your right to sue an at-fault driver for a cash settlement if it meant that: a) you received the treatment and rehabilitation you needed to get better; b) you received the income replacement you needed to help pay your bills while you recover; and c) you could pay less for your automobile insurance. (Yes/No)

| | Total | Q13=Yes |
|---|---|---|
| Repairs with used/aftermarket parts (e.g., non-OEM) / part replacement strategy | 316 | 258 |
| Higher premium where deserved (e.g., for more expensive vehicles, bad driving record) | 350 | 253 |
| Lower insurance rates / lower premiums | 330 | 236 |
| Establish reasonable/fair prices / stop inflated prices | 314 | 233 |
| Higher insurance cost / more expensive insurance | 308 | 222 |
| Reduce costs / more discounts (generally) | 266 | 207 |
| Cap rates / put on reasonable caps (on insurance, repairs, etc.) | 239 | 184 |
| Overhaul/regulate repair shop system (more options, more audits, public guides, etc.) | 233 | 181 |
| Incentives for good driving record / no penalties for hail, theft, etc. | 211 | 164 |
| Accountability for at-fault drivers/owners (charge them cost of repairs, higher rates, etc.) | 226 | 161 |

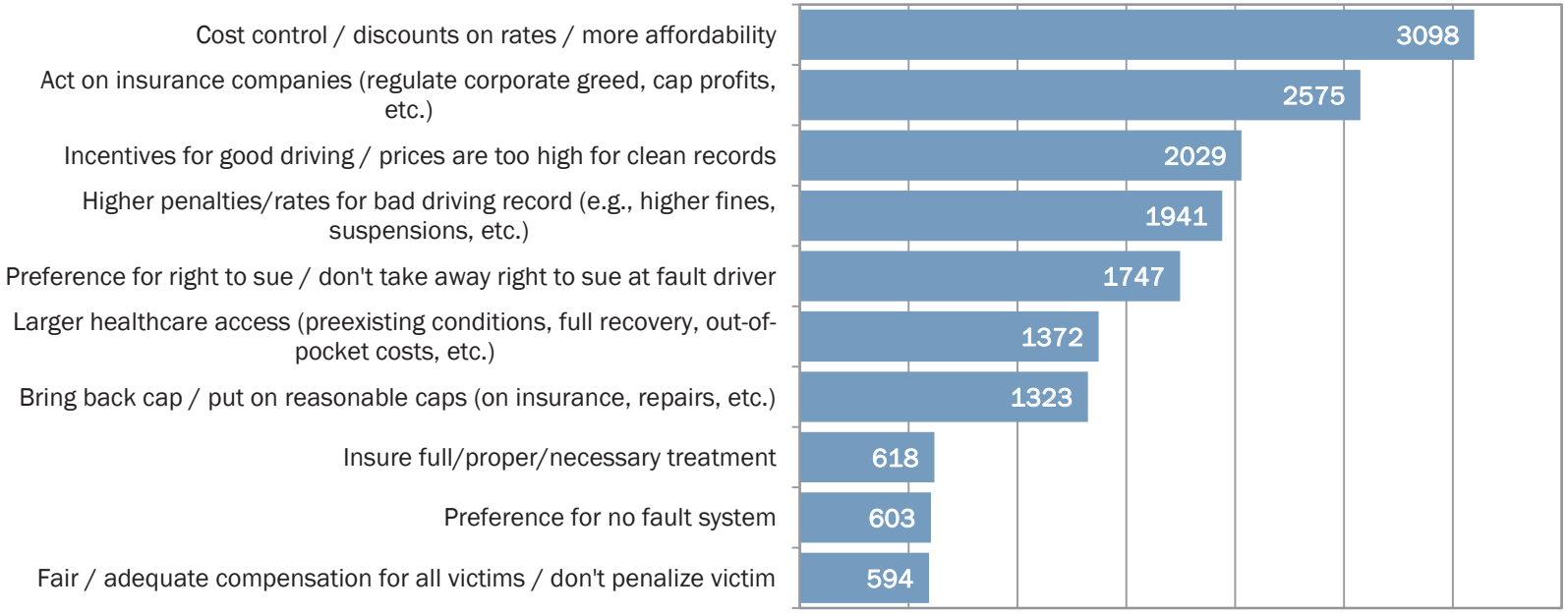
| | Total | Q13=No |
|---|---|---|
| Higher premium where deserved (e.g., for more expensive vehicles, bad driving record) | 350 | 67 |
| Lower insurance rates / lower premiums | 330 | 62 |
| Establish reasonable/fair prices / stop inflated prices | 314 | 59 |
| Higher insurance cost / more expensive insurance | 308 | 56 |
| Accountability for at-fault drivers/owners (charge them cost of repairs, higher rates, etc.) | 226 | 48 |
| Reduce costs / more discounts (generally) | 266 | 47 |
| Restrict/set a cap to profits / greedy industry | 192 | 46 |
| Repairs with used/aftermarket parts (e.g. non-OEM) / part replacement strategy | 316 | 43 |
| Overhaul/regulate repair shop system (more options, more audits, public guides, etc.) | 233 | 38 |
| More government regulation / government-run system (e.g., public insurance) | 196 | 38 |

# Other Comments and Suggestions Mentions (Frequency)

Q17: Do you have any other comments or suggestions that you would like to share with the committee on automobile insurance reform?

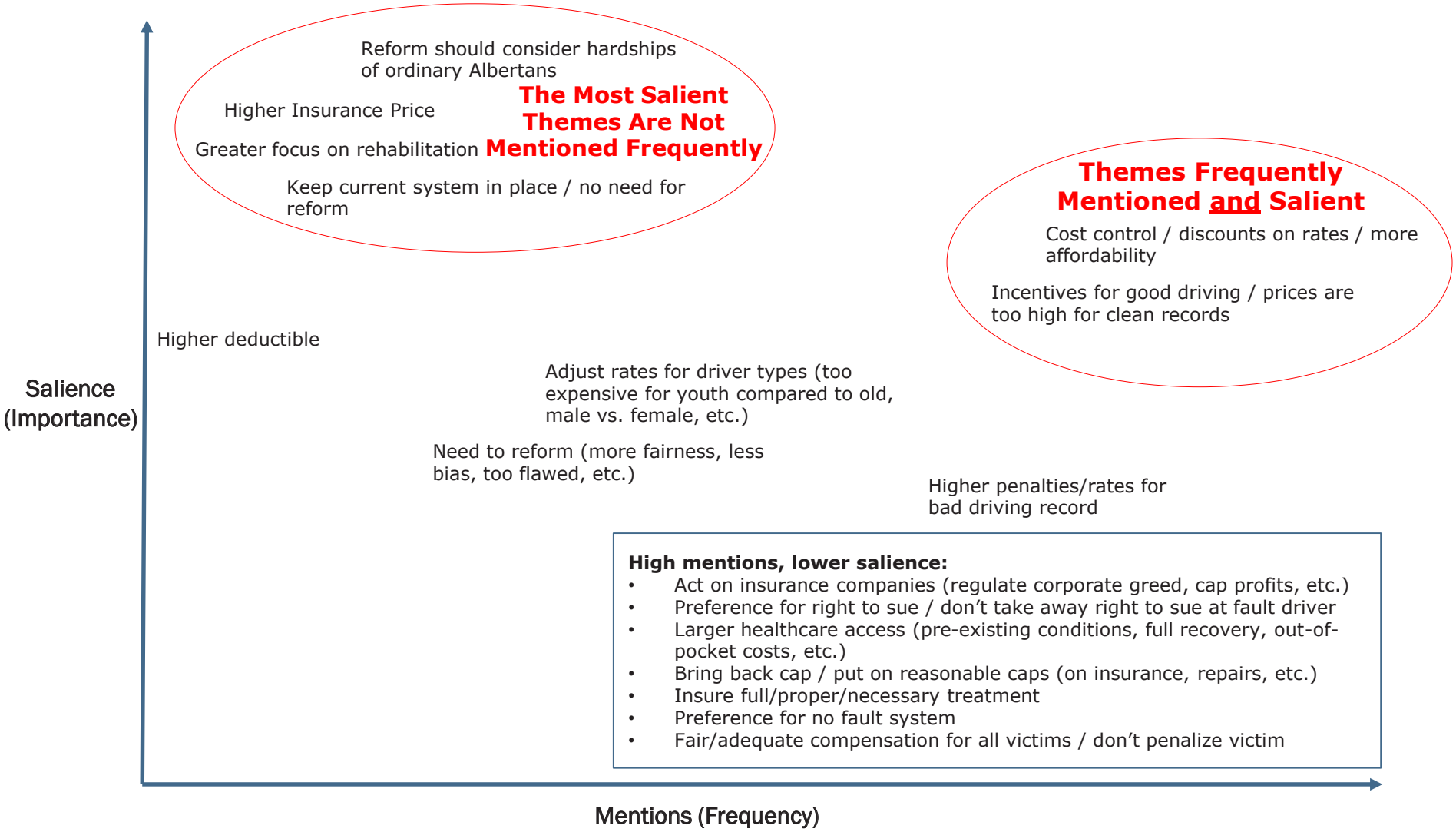
The most frequently mentioned themes are cost control / discounts on rates / more affordability, and acting on insurance companies (regulate corporate greed, cap profits, etc.), as shown below. Cost control / discounts on rates / more affordability also has relatively high salience, as shown on the following page. Another theme that is frequently mentioned and has relatively high salience is incentives for good driving / prices being too high for drivers with clean records.

## Top 10 Most Frequently Mentioned Themes (ordered by number of respondents)



# Other Comments and Suggestions
# Mentions vs. Salience, for Top 10 Most Salient Themes

Q17: Do you have any other comments or suggestions that you would like to share with the committee on automobile insurance reform?



# Other Comments and Suggestions By Responses to Q13

The following page shows a comparison of the most frequently mentioned themes based on whether Albertans would be willing to give up their right to sue an at-fault driver for a cash settlement if it meant that: a) they received the treatment and rehabilitation they needed to get better; b) they received the income replacement they needed to help pay their bills while in recovery; and c) they could pay less for their automobile insurance.

The comparison shows that the themes are ranked quite differently by the two groups.

Notably, those who would give up their right to sue most frequently mention the theme of cost control / discounts / affordability, followed by incentives for good driving / prices being too high for drivers with clean records. These themes are mentioned less - ranked 4$^{th}$ and 9$^{th}$ respectively - among those who would not give up the right to sue.

Those who would not give up the right to sue most frequently mention a preference for the right to sue, indicating a consistent position across the two survey questions. Some of those who would give up the right to sue also mention wanting the right to sue, with that theme ranked 7$^{th}$. However, when faced with making a choice, they chose treatment and rehabilitation, income replacement, and the idea of paying less over having the right to sue.

# Other Comments and Suggestions By Responses to Q13

Q17: Do you have any other comments or suggestions that you would like to share with the committee on automobile insurance reform?
Q13: Would you be willing to give up your right to sue an at-fault driver for a cash settlement if it meant that: a) you received the treatment and rehabilitation you needed to get better; b) you received the income replacement you needed to help pay your bills while you recover; and c) you could pay less for your automobile insurance. (Yes/No)

| | Total | Q13=Yes | | Total | Q13=No |
|---|---|---|---|---|---|
| Cost control / discounts on rates / more affordability | 3093 | 2110 | Preference for right to sue / don't take away right to sue at fault driver | 1744 | 1120 |
| Incentives for good driving / prices are too high for clean records | 2029 | 1459 | Act on insurance companies (regulate corporate greed, cap profits, etc.) | 2571 | 982 |
| Act on insurance companies (regulate corporate greed, cap profits, etc.) | 2571 | 1327 | Larger healthcare access (pre-existing conditions, full recovery, out-of-pocket costs, etc.) | 1370 | 796 |
| Higher penalties/rates for bad driving record (e.g. higher fines, suspensions, etc.) | 1940 | 1207 | Cost control / discounts on rates / more affordability | 3093 | 702 |
| Bring back cap / put on reasonable caps (on insurance, repairs, etc.) | 1320 | 774 | Higher penalties/rates for bad driving record (e.g. higher fines, suspensions, etc.) | 1940 | 582 |
| Larger healthcare access (pre-existing conditions, full recovery, out-of-pocket costs, etc.) | 1370 | 447 | Fair/adequate compensation for all victims / don't penalize victim | 593 | 401 |
| Preference for right to sue / don't take away right to sue at fault driver | 1744 | 414 | Preference for no fault system | 603 | 399 |
| Adjust rates for driver types (too expensive for youth compared to old, male vs female, etc.) | 515 | 412 | Bring back cap / put on reasonable caps (on insurance, repairs, etc.) | 1320 | 398 |
| Government-run system / more governmental responsibility | 503 | 280 | Incentives for good driving / prices are too high for clean records | 2029 | 393 |
| Higher premium (ex. for more expensive vehicles, bad driving record) | 354 | 230 | Insure full/proper/necessary treatment | 617 | 347 |

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# DATA QUALITY

**Online Survey**

**February 18 – March 6, 2020**

# Alberta Government Identification of Issues

To protect respondent confidentiality, the Government of Alberta does not store personally-identifiable (including IP addresses) with individual survey responses.

However, a review of server activity by Service Alberta during the fielding of this survey revealed that, between February 27 and March 6, five (5) IP addresses made more than 130,000 requests to load an image embedded within the online survey, appearing on each of the 9 survey pages.

Over the same time period 14,552 'short' surveys were submitted, initially identified by:

- A completion time of 20 seconds or less; and
- Providing no qualitative (text) responses

A closer analysis also revealed that all 14,552 'short' surveys followed the same (identical) response pattern:

- All indicated a preference for the 'right to sue'
- Randomization of demographic questions, and other attitudinal questions that do not address 'right to sue'

Results from these 'short' surveys have not been included in the main body of this report, as they appear to be a deliberate attempt to skew results and over represent a particular viewpoint for the committee's attention, and/or discredit the results of a survey that tens of thousands of Albertans provided input on. Combined results from these short surveys have been included in the Appendix for reference.

It should be noted that the Government of Alberta has fielded dozens of Public Engagement surveys in the past years, without interference from what appears to be a large-scale attempt to skew results. The evidence of such interference in this survey has lead to a review with the GOA of how public engagements can remain accessible to public participation, with security measures that do not compromise an individuals right to provide feedback anonymously.

# APPENDIX

**Online Survey**

**February 18 – March 6, 2020**

# Short Response Submissions (excluded from analysis)

| Age | Survey Responses (n=14,552) |
|---|---|
| Under 18 | 17% |
| Between 18 and 24 | 17% |
| Between 25 and 44 | 17% |
| Between 45 and 64 | 17% |
| 65 or over | 17% |
| Prefer not to say | 17% |

| Gender | Survey Responses (n=14,552) |
|---|---|
| Male | 45% |
| Female | 55% |
| Prefer not to say | 0% |

| Region | Survey Responses (n=14,552) |
|---|---|
| Calgary | 18% |
| Edmonton | 20% |
| Other Alberta | 60% |

| Please indicate if you or any member of your household are currently employed in any of the following professions (select all that apply). | Survey Responses (n=14,552) |
|---|---|
| Medical community or health care practitioner | 0% |
| Legal community | 0% |
| Insurance industry | 0% |
| None of the above | 100% |

| Do you have a private passenger vehicle? | Survey Responses (n=14,552) |
|---|---|
| Yes | 100% |
| No | 0% |

# Short Response Submissions (excluded from analysis)

| In the past 2 years, have you… | Survey Responses (n=14,552) |
|---|---|
| Purchased an auto insurance policy | 100% |
| Renewed an existing insurance policy with the same company or agent | 100% |
| Sought competitive quotes for automobile insurance | 100% |
| Changed automobile insurance providers to obtain a better rate | 0% |
| Had a claim made against you on your auto insurance | 0% |
| Made a collision claim where you were at fault | 0% |
| Made a claim against a responsible driver who was at fault | 0% |
| Been denied automobile insurance coverage | 0% |

| Have you ever been injured in an automobile accident? | Survey Responses (n=14,552) |
|---|---|
| Yes | 45% |
| No | 55% |
| Don't know | 0% |
| Prefer not to say | 0% |

# Short Response Submissions (excluded from analysis)

Leger

Please indicate how much you agree or disagree with the following statements:

| My automobile insurance premiums are fair and reasonable | Survey Responses (n=14,552) |
|---|---|
| TOTAL AGREE | 34% |
| Strongly agree | 17% |
| Agree | 17% |
| NEITHER | 17% |
| TOTAL DISAGREE | 32% |
| Disagree | 16% |
| Strongly disagree | 16% |
| Don't know | 16% |

| I understand what my automobile insurance covers and what it doesn't | Survey Responses (n=14,552) |
|---|---|
| TOTAL AGREE | 33% |
| Strongly agree | 17% |
| Agree | 17% |
| NEITHER | 17% |
| TOTAL DISAGREE | 33% |
| Disagree | 16% |
| Strongly disagree | 17% |
| Don't know | 17% |

# Short Response Submissions (excluded from analysis)

Leger

Under Alberta's current automobile insurance system:

- Medical benefits (called "accident benefits") are available to anyone injured in a collision regardless of fault, but those benefits are limited to $50,000 and are limited for two years following the collision (accident)
- Damages as a result of the actions of an at-fault driver, can either be negotiated or resolved directly with the at-fault driver's insurer, or the person suffering damages can sue the at-fault driver to recover those damages from the insurer.
- When people are injured in collisions, those not at-fault can claim against the at-fault driver for care costs that are not covered by the publicly-funded health system, as well as for lost income and pain and suffering damages.
- At-fault drivers are limited to claiming the no-fault medical and disability benefits available to them under their automobile policies (Accident Benefits). Seriously or catastrophically injured Albertans who are at-fault may not have access to the care that they need.

In developing reforms in auto insurance in Alberta, there will be trade-offs. Please indicate your preferences of various elements of models below.

| In a situation where you were injured as a result of the actions of an at-fault driver, which would be more important to you? | Survey Responses (n=14,552) |
|---|---|
| The right to sue the at-fault driver for a cash settlement | 100% |
| Having coverage that provides immediate access to medical treatment and rehabilitation as well as income replacement | 0% |
| Don't know/no preference | 0% |
| No response | 0% |

# Short Response Submissions (excluded from analysis)

Alberta's current automobile insurance system focuses on the ability to make monetary claims against at-fault drivers. As a result, litigation is one of the main cost drivers in the system: hiring legal representatives and medical experts to support parties' interests is expensive and time consuming. Settlement costs, including interest, pain and suffering damages, and other damages, add cost pressure to the system. This, in turn, results in higher insurance rates for Albertans.

| Please indicate which of the following is more important to you: | Survey Responses (n=14,552) |
|---|---|
| The right to sue an at-fault driver for a cash settlement; or | 100% |
| Access to more affordable automobile insurance rates | 0% |
| Don't know/no preference | 0% |
| No response | 0% |

# Short Response Submissions (excluded from analysis)

Leger

Alberta's current automobile insurance system focuses on the ability to make monetary claims against at-fault drivers. As a result, litigation is one of the main cost drivers in the system: hiring legal representatives and medical experts to support parties' interests is expensive and time consuming. Settlement costs, including interest, pain and suffering damages, and other damages, add cost pressure to the system. This, in turn, results in higher insurance rates for Albertans.

| If you were injured in an automobile collision, what would be more important to you: | Survey Responses (n=14,552) |
|---|---|
| The right to sue with the potential to receive a cash settlement at some point in the future that you would use to pay for all treatment and rehabilitation that you may require. | 100% |
| No right to sue regardless of fault, however all medically required treatment and rehabilitation with income replacement are provided as long as required, potentially for the rest of your life. | 0% |
| Don't know/no preference | 0% |
| No response | 0% |

# Short Response Submissions (excluded from analysis)

Alberta's current automobile insurance system focuses on the ability to make monetary claims against at-fault drivers. As a result, litigation is one of the main cost drivers in the system: hiring legal representatives and medical experts to support parties' interests is expensive and time consuming. Settlement costs, including interest, pain and suffering damages, and other damages, add cost pressure to the system. This, in turn, results in higher insurance rates for Albertans.

**Would you be willing to give up your right to sue an at-fault driver for a cash settlement if it meant that**:

a) you received the treatment and rehabilitation you needed to get better;
b) you received the income replacement you needed to help pay your bills while you recover; and
c) you could pay less for your automobile insurance.

| | Survey Responses (n=14,552) |
|---|---|
| Yes | 0% |
| No | 100% |
| Don't know/no preference | 0% |
| No response | 0% |

# Short Response Submissions (excluded from analysis)

Alberta's current automobile insurance system focuses on the ability to make monetary claims against at-fault drivers. As a result, litigation is one of the main cost drivers in the system: hiring legal representatives and medical experts to support parties' interests is expensive and time consuming. Settlement costs, including interest, pain and suffering damages, and other damages, add cost pressure to the system. This, in turn, results in higher insurance rates for Albertans.

**Would you be in favor of giving up your right to sue an at-fault driver for a cash settlement for pain and suffering if it meant that all Albertans suffering serious permanent injuries (such as loss of a limb, loss of eyesight, serious brain or spinal cord injuries) would be eligible to receive a one-time, lump-sum permanent impairment benefit?**

| | Survey Responses (n=14,552) |
|---|---|
| Yes | 0% |
| No | 100% |
| Don't know/no preference | 0% |
| No response | 0% |

# Short Response Submissions (excluded from analysis)

The vast majority of collisions do not occur intentionally. They happen because drivers make mistakes, errors in judgment, or due to weather conditions. In today's environment drivers who are at-fault are limited to claiming the no-fault Accident Benefits available to them under their automobile policies.

As a result, Albertans who suffer a serious or catastrophic injury (such as severe brain injury or spinal cord injury), and are deemed at-fault for the accident, may not have access to the care or income support that they need. At-fault drivers are also subject to penalties under law and face higher insurance premiums.

| If a driver is at-fault in a collision, how should they be held responsible for their actions: | Survey Responses (n=14,552) |
|---|---|
| By giving them less access to treatment, rehabilitation, and income replacement benefits than would be available to injured Albertans who are not at-fault | 0% |
| By making them subject to penalties which could include fines, convictions and/or driving restrictions along with higher insurance rates | 100% |
| Don't know/no preference | 0% |
| No response | 0% |

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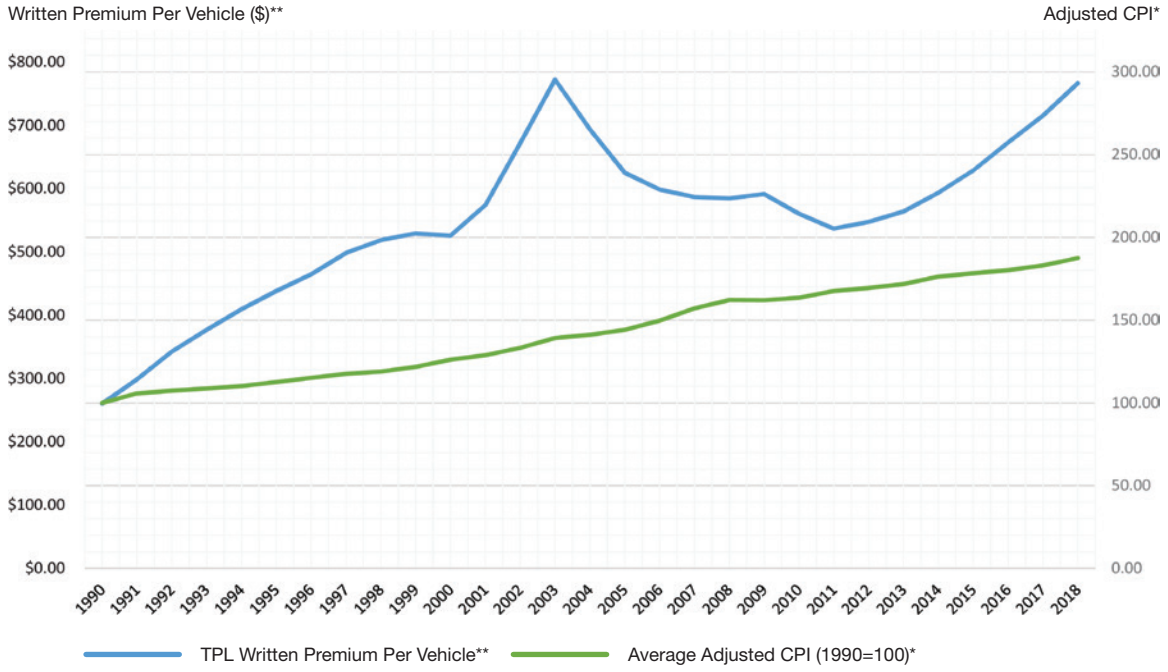
# C. Appendix 3 – Cheng Rating Graph April, 2020

## Alberta private passenger third party liability written premium per vehicle




* Source: Statistics Canada. Table 18-10-0004-13 Consumer Price Index, All-Items, Alberta, monthly, percentage change, not seasonally adjusted. CPI is recalibrated assuming AY 1990 is at 100pts.

** Written premium per vehicle adjusted by recalibrated CPI.

# Appendix 4 – Cheng Transaction Cost Report April 20, 2020

ESTIMATE OF THE

# ANNUAL TRANSACTIONAL COSTS OF PRIVATE PASSENGER MOTOR VEHICLE LITIGATION IN ALBERTA

EXPRESSED IN 2018 DOLLARS

Prepared by: Joe S. Cheng, F.C.I.A

For: Treasury Board and Finance

Date of Letter: April 8, 2020

JSCP®
ACTUARIES *Who Care*®
J. S. CHENG & PARTNERS INC.

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April 8, 2020

Automobile Insurance Reform Advisory Committee
c/o Treasury Board and Finance
4th Floor, Terrace Building
9515-107 Street
Edmonton, AB T5K 2C3

Dear Advisory Committee Members:

**RE: <u>Estimate of the Annual Transactional Costs of Private Passenger Motor Vehicle Litigation in Alberta</u>**

You have asked J. S. Cheng & Partners Inc. (JSCP) to estimate the annual transactional costs pertaining to litigation in the private passenger automobile (PPA) third party liability insurance system. Transactional costs are defined as:

(1) Disbursements,
(2) Insurers' lawyers fees (internal and external),
(3) Adjusters' fees (internal and external),
(4) Defence medical, expert reports and other related expenses, and
(5) Contingency fee paid by the plaintiff

We have used the 2018 all-industry PPA data and the 2019 Alberta closed claim survey to conduct this estimate. In our opinion, the 2018 transactional costs in the Alberta PPA third party liability insurance system was about $383 million for accidents in Alberta. On a per vehicle basis, transactional costs were about $140 per vehicle or 20.2% of third party liability premiums.

We are pleased to submit our report for your review. Please let us know if you have any questions or comments about our report.

Yours truly,

Joe S. Cheng, FCIA

Encl.

**Data and Reliance**

We have relied on the general accuracy of the information provided by General Insurance Statistical Agency (GISA) and surveys completed by several licensed Alberta insurers, without audit or independent verification, and we assumed it was complete. The accuracy of our results is dependent upon the accuracy and completeness of this underlying data.

**Distribution and Use**

This report is intended for the management of Treasury Board and Finance (TBF). Its sole purpose is to provide an estimate of annual private passenger motor vehicle litigation transactional costs in Alberta.

This report is neither intended nor necessarily suitable for any other use. Distribution beyond the intended audiences is permitted provided that it is authorized by TBF and the recipient is made aware that they are a third party to this report and that JSCP will be available for further questions on this report.

Parties other than the management of TBF are third parties to this report. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. JSCP accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

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## 1. Purpose of the Report

The purpose of this report is to estimate the annual transactional costs of private passenger motor vehicle litigation in Alberta.

## 2. Data

We have relied on information provided by licensed Alberta insurers in the form of completed surveys. In addition, we have used various General Insurance Statistical Agency (GISA) Alberta automobile exhibits.

## 3. Definitions

Allocated Loss Adjustment Expenses (ALAE) is the sum of the following items:

| | |
|---|---|
| Insurer's Outside Counsel Fees | Defence Medical Reports |
| Insurer's In-house Counsel Fees | Other Expert Fees (such as actuary, economist) |
| Independent Adjuster Fees | Other Claim Expenses (such as police reports) |
| Insurer's In-house Adjuster Fees | |

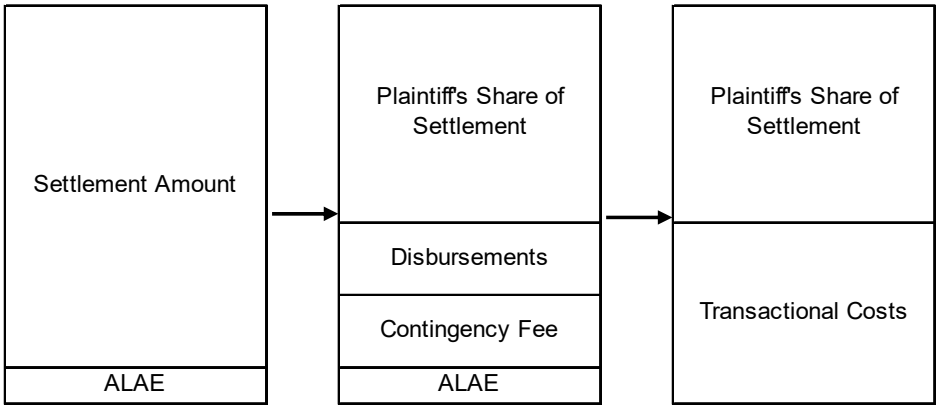
Unallocated Loss Adjustment Expenses (ULAE) are expenses incurred that cannot be attributed to a specific claim such as salary and rent of claims department.

Settlement amount includes past and future pecuniary losses (i.e. loss of income, medical and rehabilitation, etc.), non-pecuniary losses (i.e. pain and suffering, loss of consortium, etc.), prejudgment interest, plaintiff lawyer's costs and disbursements.

Loss and settlement amount are used interchangeably in this report.

Transactional costs are the sum of ALAE, disbursements, and contingency fees.

Total Loss & ALAE is the sum of settlement and ALAE. The following diagram shows the total loss & ALAE and the approach to derive the transactional costs in the total loss & ALAE.




## 4. Methodology

a. ALAE and settlement amount by claim are taken from the surveys completed by licensed Alberta insurers. The survey includes claims that were closed in years 2010, 2012 and 2017.

b. For the purpose of this report, we segregated the ALAE and settlement amount into two categories: Accidents in Alberta and accidents outside of Alberta.

c. Contingency fee is embedded in the settlement amount. The Automobile Insurance Reform Advisory Committee suggested that we use 33% of the total settlement amount less disbursements as the contingency fee of each claim.

d. For each claim, ALAE and settlement amount are trended from the date of the accident to June 30, 2018 (average accident date in 2018) using a trend rate of 8.5%. The trend rate is established using average severity of Alberta tort bodily injury claims from accident years 2010 to 2018. See Appendix C for details.

e. We divided the trended settlement amount into three components: plaintiff's share of settlement, disbursements, and contingency fees. Disbursements as well as contingency fees are added to ALAE to form the total transactional costs.

f. Total transactional costs (from step e) are then divided by the total trended loss and ALAE to derive the transactional costs percentage. See Appendix B for details.

g. Finally, we applied the transactional costs percentage (from step f) to the total loss and ALAE amount for accident year 2018 to derive the transactional costs at 2018 level.

h. To express the transactional costs as a percentage of premiums, we divided the 2018 transactional costs by the total third party liability (TPL) premiums in 2018. The total TPL premiums are taken from GISA's report.

The following table shows the estimated 2018 transactional costs in aggregate dollars and on a per vehicle basis:

| **Accident Year 2018** | **Accidents in AB** | Accidents outside of AB | Total |
|---|---|---|---|
| (1) Transactional Costs as % of Loss & ALAE | **40.6%** | 41.0% | 40.6% |
| (2) Total Transactional Costs | **$382,633,911** | $34,978,840 | $417,612,751 |
| (3) Total TPL Premiums in AY2018 | **$1,891,597,635** | $1,891,597,635 | $1,891,597,635 |
| (4) Transactional Costs % as TPL Premium | **20.2%** | 1.8% | 22.1% |
| (5) Earned Vehicle | **2,743,660** | 2,743,660 | 2,743,660 |
| (6) Transactional Costs per Vehicle (2) / (5) | **$139.5** | $12.7 | $152.2 |

## 5. Distribution of Transactional Costs by Item

We expressed each item as a percentage of total transactional cost dollars at 2018 level. The distribution by item is shown below and in Appendix B1:

| | Accidents in Alberta only | |
|---|---|---|
| **2018 Dollars** | ($) | (%) |
| Disbursements | 28,336,011 | 7.4% |
| Insurer's Outside Counsel Fees | 45,909,850 | 12.0% |
| Insurer's In-house Counsel Fees | 5,390,239 | 1.4% |
| Independent Adjuster Fees | 10,529,663 | 2.8% |
| Insurer's In-house Adjuster Fees | 1,257,881 | 0.3% |
| Defence Medical Reports | 5,468,795 | 1.4% |
| Other Expert Fees | 7,108,317 | 1.9% |
| Other Claim Expenses | 2,467,601 | 0.6% |
| Estimated Contingency Fees | 276,165,554 | 72.2% |
| Est. 2018 Total Transactional Costs | 382,633,911 | 100.0% |

## 6. Sensitivity Testing on Trend Rate Selection

In this report, we have trended all historical settlement amounts and ALAE to 2018 level using a trend rate of 8.5%. To ensure using a different trend rate would not affect the results significantly, we have repeated the calculations with a trend rate 1% higher and lower than the selected rate. This table shows the estimated 2018 transactional costs in aggregate dollars and per vehicle using 7.5% and 9.5% trend rates:

| **Accident Year 2018** | **Accidents in Alberta only** | | |
|---|---|---|---|
| Selected Trend Rate | **7.50%** | **8.50%** | **9.50%** |
| Transactional Costs as % of Loss & ALAE | 40.4% | 40.6% | 40.7% |
| Total Transactional Costs ($) | $381,418,245 | $382,633,911 | $383,839,665 |
| Total TPL Premiums in AY2018 | $1,891,597,635 | $1,891,597,635 | $1,891,597,635 |
| **Transactional Costs % as TPL Premium** | **20.2%** | **20.2%** | **20.3%** |
| Earned Vehicle | 2,743,660 | 2,743,660 | 2,743,660 |
| Transactional Costs per Vehicle (2) / (5) | $139.0 | $139.5 | $139.9 |
| **Difference in Transactional Costs per Vehicle** | **-$0.4** | **$0.0** | **$0.4** |

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# 7. INDEX TO THE APPENDICES

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| Appendix A | Summary of Transactional Costs at 2018 Level |
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| Appendix C | Trend Rate Selection |
| Appendix D | Sensitivity Testing on Trend Rate Selection |
| Appendix E | Derivation of Transactional Costs Percentage by Claim Close Year |

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# APPENDIX A

Summary of Transactional Costs at 2018 Level

**Transactional costs in the Alberta (AB) Private Passenger Vehicle Litigation**
**Summary (Bodily Only) for Accident Year 2018**

**Summary: GISA Data for Accident Year 2018:**

| | | Breakdown of TPL Loss & LAE | | |
|---|---|---|---|---|
| | | TPL | PD | BI |
| (1) | Aggregate Loss & LAE & Health Service Levy | 1,735,619,075 | 482,819,426 | 1,252,799,649 |
| (2) | Earned Premium | 1,891,597,635 | | |
| (3) | Earned Vehicle | 2,743,660 | | |
| (4) | Health Service Levy | 120,449,927 | 0 | 120,449,927 |
| (5) | ULAE | 147,954,999 | 44,227,905 | 103,727,094 |
| (6) | Losses incl. ALAE | 1,467,214,149 | 438,591,521 | 1,028,622,628 |

Notes:

(1) TPL data from GISA Loss Ratio Report AY 2018
PD & BI from (4) + (5) + (6)

(2) From GISA Loss Ratio Report AY 2018

(3) From GISA Loss Ratio Report AY 2018

(4) Earned Premium x 2018 Health Service Levy Factor (from GISA Loss Ratio Report)

(5) TPL = (1) - (4) - (6)
PD & BI proportionated based on (6) Losses incl. ALAE.

(6) From GISA Loss Development Factors Report AY 2018

**Transactional Costs in the Alberta (AB) Private Passenger Vehicle Litigation**
**Summary (Bodily Only) for Accident Year 2018**

**Bodily Injury: Aggregate ($) Basis for AY2018:**

| | | Accidents in AB | Accidents outside of AB | Total |
|---|---|---|---|---|
| (1) | BI Loss & ALAE | 943,333,672 | 85,288,956 | 1,028,622,628 |
| (2) | Health Service Levy | 120,449,927 | 0 | 120,449,927 |
| (3) | ULAE | 95,126,490 | 8,600,604 | 103,727,094 |
| (4) | Total Losses incl. ALAE, ULAE & H.S. Levy | 1,158,910,089 | 93,889,560 | 1,252,799,649 |
| (5) | Transactional costs as % of Loss & ALAE | 40.6% | 41.0% | 40.6% |
| (6) | Transactional costs ($) | 382,633,911 | 34,978,840 | 417,612,751 |
| (7) | Total TPL Premiums in AY2018 | 1,891,597,635 | 1,891,597,635 | 1,891,597,635 |
| (8) | Transactional costs % as TPL Premium | 20.2% | 1.8% | 22.1% |

**Per Vehicle Basis for AY2018:**

| | | Accidents in AB | Accidents outside of AB | Total |
|---|---|---|---|---|
| (9) | Loss & ALAE | 343.8 | 31.1 | 374.9 |
| (10) | Health Service Levy | 43.9 | 0.0 | 43.9 |
| (11) | ULAE | 34.7 | 3.1 | 37.8 |
| (12) | Total Losses incl. ALAE, ULAE & H.S. Levy | 422.4 | 34.2 | 456.6 |
| (13) | Transactional costs as % of Loss & ALAE | 40.6% | 41.0% | 40.6% |
| (14) | Transactional costs per Vehicle | 139.5 | 12.7 | 152.2 |

Notes:

(1) Derived from Page 1. Proportionated based on Appendix B page 1, line (11) column (d)-(f).
(2) See Page 1 for details.
(3) Derived from Page 1. Proportionated based on (1).
(4) = (1) + (2) + (3)
(5) See Appendix B page 1, line (13) column (d)-(f). Based on BI claims in Alberta.
(6) = (4) x (5)
(7) From GISA report. See Page 1 for details.
(8) = (6) / (7)
(9) = (1) / Total Earned Vehicles in AY2018
(10) = (2) / Total Earned Vehicles in AY2018
(11) = (3) / Total Earned Vehicles in AY2018
(12) = (9) + (10) + (11)
(13) = (5)
(14) = (9) x (13)

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# APPENDIX B

Derivation of Transactional Costs Percentage

**Transactional Costs in the Alberta (AB) Private Passenger Vehicle Litigation**
**Derivation of Transactional Costs Ratio**
**Aggregate of Claims Close Years 2010, 2012 and 2017**

| | | Actual in Data | | | Trended to 2018 Level @ 8.5% per Annum | | |
|---|---|---|---|---|---|---|---|
| | | Accidents in AB | Accidents outside of AB | Total Alberta | Accidents in AB | Accidents outside of AB | Total Alberta |
| | | (a) | (b) | (c) | (d) | (e) | (f) |
| (1) | Total Settlement [including Item (2)] | 52,202,753 | 4,671,421 | 56,874,173 | 106,845,010 | 9,592,733 | 116,437,743 |
| (2) | Disbursements | 1,553,595 | 156,819 | 1,710,414 | 3,499,257 | 319,790 | 3,819,047 |
| (3) | Insurer's Outside Counsel fees | 2,174,777 | 273,573 | 2,448,349 | 5,669,476 | 600,976 | 6,270,453 |
| (4) | Insurer's In-house Counsel fees | 267,020 | 12,737 | 279,757 | 665,649 | 32,276 | 697,925 |
| (5) | Independent Adjuster fees | 614,421 | 47,793 | 662,214 | 1,300,324 | 92,845 | 1,393,168 |
| (6) | Insurer's In-house Adjuster fees | 51,038 | 6,030 | 57,068 | 155,338 | 20,486 | 175,823 |
| (7) | Defence Medical reports | 254,431 | 34,643 | 289,074 | 675,350 | 86,747 | 762,097 |
| (8) | Other Expert fees | 350,356 | 34,016 | 384,371 | 877,817 | 74,492 | 952,309 |
| (9) | Other Claim Expenses | 130,600 | 13,724 | 144,324 | 304,728 | 31,906 | 336,634 |
| (10) | Est. Contingency Fee | 16,714,222 | 1,489,819 | 18,204,041 | 34,104,099 | 3,060,071 | 37,164,170 |
| (11) | Total Losses and ALAE | 56,045,395 | 5,093,936 | 61,139,331 | 116,493,690 | 10,532,461 | 127,026,151 |
| (12) | Total Transactional Costs | 22,110,459 | 2,069,153 | 24,179,612 | 47,252,036 | 4,319,589 | 51,571,625 |
| **(13)** | **Transactional Costs as a % of Loss & ALAE** | **39.5%** | **40.6%** | **39.5%** | **40.6%** | **41.0%** | **40.6%** |
| (14) | Transactional Costs Ratio @ 9.5% trend rate | | | | 40.7% | 41.0% | 40.7% |
| (15) | Transactional Costs Ratio @ 7.5% trend rate | | | | 40.4% | 41.0% | 40.5% |

Notes:

(1) From Claim and Cost Study Report page 175 - 176, including advanced payments.
(2) From Claim and Cost Study Report page 176
(3)-(9) From Claim and Cost Study Report page 179
(10) Contingency fee is estimated as 33% * [(1) - (2)]
(11) = Sum [(1), (3) : (9)]
(12) = Sum [(2) : (10)]
(13) = (12) / (11)
(14) See Appendix D - Sensitivity Testing for Trend Rate
(15) See Appendix D - Sensitivity Testing for Trend Rate

**Transactional Costs in the Alberta (AB) Private Passenger Vehicle Litigation**
**Distribution of Transactional Costs Ratio**

| | | Survey Data Accidents in Alberta only | | Expressed in 2018 Dollars | |
|---|---|---|---|---|---|
| | | ($) | (%) | ($) | (%) |
| (1) | Disbursements | 3,499,257 | 7.4% | 28,336,011 | 7.4% |
| (2) | Insurer's Outside Counsel fees | 5,669,476 | 12.0% | 45,909,850 | 12.0% |
| (3) | Insurer's In-house Counsel fees | 665,649 | 1.4% | 5,390,239 | 1.4% |
| (4) | Independent Adjuster fees | 1,300,324 | 2.8% | 10,529,663 | 2.8% |
| (5) | Insurer's In-house Adjuster fees | 155,338 | 0.3% | 1,257,881 | 0.3% |
| (6) | Defence Medical reports | 675,350 | 1.4% | 5,468,795 | 1.4% |
| (7) | Other Expert fees | 877,817 | 1.9% | 7,108,317 | 1.9% |
| (8) | Other Claim Expenses | 304,728 | 0.6% | 2,467,601 | 0.6% |
| (9) | Est. Contingency Fee | 34,104,099 | 72.2% | 276,165,554 | 72.2% |
| (10) | Total Transactional Costs | 47,252,036 | 100.0% | 382,633,911 | 100.0% |

Notes:
Trended transactional costs are taken from Appendix B page 1.
Total transactional costs as 2018 level was taken from Appendix A

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# APPENDIX C

Trend Rate Selection

**Transactional Costs in the Alberta (AB) Private Passenger Vehicle Litigation**
**Bodily Injury - Selection of Trend Rate**

**Loss Trend Analysis:**

| Accident Year | Frequency | Severity | Loss Cost | Linear Regression Ln(Freq) | Ln(Sev) | Ln(LC) |
|---|---|---|---|---|---|---|
| 2010 | 0.607 | $34,153 | $20,731 | (0.4992) | 10.4386 | 9.9394 |
| 2011 | 0.608 | $36,604 | $22,261 | (0.4973) | 10.5079 | 10.0106 |
| 2012 | 0.602 | $42,035 | $25,312 | (0.5072) | 10.6463 | 10.1390 |
| 2013 | 0.637 | $42,779 | $27,235 | (0.4515) | 10.6638 | 10.2123 |
| 2014 | 0.635 | $47,447 | $30,144 | (0.4536) | 10.7674 | 10.3137 |
| 2015 | 0.634 | $53,748 | $34,090 | (0.4553) | 10.8921 | 10.4367 |
| 2016 | 0.620 | $60,475 | $37,524 | (0.4773) | 11.0100 | 10.5327 |
| 2017 | 0.630 | $60,398 | $38,078 | (0.4613) | 11.0087 | 10.5474 |
| 2018 | 0.599 | $62,618 | $37,491 | (0.5130) | 11.0448 | 10.5319 |
| | | | Co-efficient | 0.0018 | 0.0814 | 0.0832 |
| | | | R-Squared | 0.0400 | 0.9696 | 0.9543 |
| | | | Indicated Annual Trend | 0.18% | 8.48% | 8.68% |

| | Annual | Daily |
|---|---|---|
| Selected Severity Trend | 8.50% | 0.022% |
| Selected +1.0% (for sensitivity analysis) | 9.50% | 0.025% |
| Selected -1.0% (for sensitivity analysis) | 7.50% | 0.020% |

*Losses are trended from accident date to 6/30/2018 using daily trend rate

**GISA Data used in Trend Analysis:**

| Accident Year | Car Years Earned | Number of Claims | Frequency per 100 Veh. % | Ultimate Losses $000 | Severity | Loss Cost |
|---|---|---|---|---|---|---|
| 2010 | 2,247,312 | 13,641 | 0.607 | 465,882 | 34,153 | 20,731 |
| 2011 | 2,307,245 | 14,032 | 0.608 | 513,621 | 36,604 | 22,261 |
| 2012 | 2,392,014 | 14,404 | 0.602 | 605,470 | 42,035 | 25,312 |
| 2013 | 2,480,463 | 15,792 | 0.637 | 675,562 | 42,779 | 27,235 |
| 2014 | 2,577,019 | 16,372 | 0.635 | 776,807 | 47,447 | 30,144 |
| 2015 | 2,652,570 | 16,824 | 0.634 | 904,253 | 53,748 | 34,090 |
| 2016 | 2,678,904 | 16,622 | 0.620 | 1,005,219 | 60,475 | 37,524 |
| 2017 | 2,690,011 | 16,959 | 0.630 | 1,024,291 | 60,398 | 38,078 |
| 2018 | 2,743,660 | 16,427 | 0.599 | 1,028,623 | 62,618 | 37,491 |
| Total | 22,769,198 | 141,073 | 0.620 | 6,999,728 | 49,618 | 30,742 |

Source: Alberta PP (excluding Farmers) ILDF Report: Tort Bodily Injury (KOL1,2)

# APPENDIX D

Sensitivity Testing on Trend Rate Selection

**Transactional Costs in the Alberta (AB) Private Passenger Vehicle Litigation**

**Sensitivity Analysis: Trend Rate Selection**

Table 1: Transactional Costs Ratio using Different Trend Rate

| | **Trend Rate at 8.5% per Annum** | | | **Trend Rate at 7.5% per Annum** | | | **Trend Rate at 9.5% per Annum** | | |
|---|---|---|---|---|---|---|---|---|---|
| | Transactional Costs | Total Loss & ALAE | Transactional Costs Ratio | Transactional Costs | Total Loss & ALAE | Transactional Costs Ratio | Transactional Costs | Total Loss & ALAE | Transactional Costs Ratio |
| In Alberta | 47,252,036 | 116,493,690 | 40.6% | 43,103,818 | 106,605,502 | 40.4% | 51,827,966 | 127,373,667 | 40.7% |
| Outside of Alberta | 4,319,589 | 10,532,461 | 41.0% | 3,951,242 | 9,642,067 | 41.0% | 4,725,401 | 11,513,712 | 41.0% |
| Total | 51,571,625 | 127,026,151 | 40.6% | 47,055,060 | 116,247,568 | 40.5% | 56,553,367 | 138,887,379 | 40.7% |

Table 2: Impact of Trend Rate Selection on Estimated Accident Year 2018 Transactional Costs

| | **Accidents in Alberta** | | | **Accidents outside of Alberta** | | | **Total Alberta** | | |
|---|---|---|---|---|---|---|---|---|---|
| | Trend Rate Used | | | Trend Rate Used | | | Trend Rate Used | | |
| | 8.50% | 7.50% | 9.50% | 8.50% | 7.50% | 9.50% | 8.50% | 7.50% | 9.50% |
| AY2018 Losses & ALAE | 943,333,672 | 943,333,672 | 943,333,672 | 85,288,956 | 85,288,956 | 85,288,956 | 1,028,622,628 | 1,028,622,628 | 1,028,622,628 |
| Transactional Costs Ratio | 40.6% | 40.4% | 40.7% | 41.0% | 41.0% | 41.0% | 40.6% | 40.5% | 40.7% |
| Estimated Transactional Costs | 382,633,911 | 381,418,245 | 383,839,665 | 34,978,840 | 34,950,731 | 35,003,875 | 417,612,751 | 416,369,137 | 418,843,481 |
| # of Earned Vehicles in 2018 | 2,743,660 | 2,743,660 | 2,743,660 | 2,743,660 | 2,743,660 | 2,743,660 | 2,743,660 | 2,743,660 | 2,743,660 |
| Transactional Costs per Vehicle | 139.5 | 139.0 | 139.9 | 12.7 | 12.7 | 12.8 | 152.2 | 151.8 | 152.7 |
| Impact of Different Trend Rate | | (0.4) | 0.4 | | (0.0) | 0.0 | | (0.5) | 0.4 |

# APPENDIX E

Derivation of Transactional Costs Percentage by Claim Close Year

**Transactional Costs in the Alberta (AB) Private Passenger Vehicle Litigation**
**Derivation of Transactional Costs Ratio by Claim Close Year**
**Claims Close Year 2010**

| | | Actual in Data | | | Trended to 2018 @ 8.5% per Annum | | |
|---|---|---|---|---|---|---|---|
| | | Accidents in AB | Accidents outside of AB | Total Alberta | Accidents in AB | Accidents outside of AB | Total Alberta |
| | | (a) | (b) | (c) | (d) | (e) | (f) |
| (1) | Total Settlement [including Item (2)] | 12,289,057 | 1,401,219 | 13,690,277 | 34,433,481 | 4,110,072 | 38,543,552 |
| (2) | Disbursements | 347,323 | 33,727 | 381,050 | 1,018,840 | 98,856 | 1,117,696 |
| (3) | Insurer's Outside Counsel Fees | 621,994 | 54,528 | 676,523 | 1,973,531 | 176,853 | 2,150,384 |
| (4) | Insurer's In-house Counsel Fees | 107,818 | 12,737 | 120,555 | 322,986 | 32,276 | 355,262 |
| (5) | Independent Adjuster Fees | 256,918 | 16,733 | 273,650 | 659,524 | 38,985 | 698,509 |
| (6) | Insurer's In-house Adjuster Fees | 40,925 | 6,030 | 46,955 | 129,104 | 20,486 | 149,589 |
| (7) | Defence Medical Reports | 81,216 | 32,438 | 113,654 | 249,080 | 83,158 | 332,238 |
| (8) | Other Expert Fees | 118,353 | 13,388 | 131,741 | 354,350 | 36,654 | 391,003 |
| (9) | Other Claim Expenses | 41,241 | 9,063 | 50,304 | 117,105 | 24,697 | 141,802 |
| (10) | Est. Contingency Fee | 3,940,773 | 451,272 | 4,392,045 | 11,026,831 | 1,323,701 | 12,350,533 |
| (11) | Total Losses and ALAE | 13,557,523 | 1,546,136 | 15,103,658 | 38,239,160 | 4,523,180 | 42,762,340 |
| (12) | Total Transactional Costs | 5,556,560 | 629,916 | 6,186,476 | 15,851,351 | 1,835,666 | 17,687,016 |
| **(13)** | **Transactional Costs as a % of Loss & ALAE** | **41.0%** | **40.7%** | **41.0%** | **41.5%** | **40.6%** | **41.4%** |



Notes:

(1) From Claim and Cost Study Report page 175 - 176, including advanced payments.
(2) From Claim and Cost Study Report page 176
(3)-(9) From Claim and Cost Study Report page 179
(10) Contingency fee is estimated as 33% * [(1) - (2)]
(11) = Sum [(1), (3) : (9)]
(12) = Sum [(2) : (10)]
(13) = (12) / (11)

**Transactional Costs in the Alberta (AB) Private Passenger Vehicle Litigation**
**Derivation of Transactional Costs Ratio by Claim Close Year**
**Claims Close Year 2012**

| | | Actual in Data | | | Trended to 2018 @ 8.5% per Annum | | |
|---|---|---|---|---|---|---|---|
| | | Accidents in AB | Accidents outside of AB | Total Alberta | Accidents in AB | Accidents outside of AB | Total Alberta |
| | | (a) | (b) | (c) | (d) | (e) | (f) |
| (1) | Total Settlement [including Item (2)] | 15,365,770 | 606,998 | 15,972,769 | 36,455,613 | 1,314,960 | 37,770,573 |
| (2) | Disbursements | 530,105 | 31,991 | 562,096 | 1,419,308 | 75,727 | 1,495,035 |
| (3) | Insurer's Outside Counsel Fees | 867,186 | 83,570 | 950,756 | 2,486,092 | 200,632 | 2,686,723 |
| (4) | Insurer's In-house Counsel Fees | 75,668 | 0 | 75,668 | 211,390 | 0 | 211,390 |
| (5) | Independent Adjuster Fees | 195,471 | 10,169 | 205,639 | 414,584 | 20,729 | 435,312 |
| (6) | Insurer's In-house Adjuster Fees | 8,713 | 0 | 8,713 | 22,561 | 0 | 22,561 |
| (7) | Defence Medical Reports | 97,280 | 0 | 97,280 | 270,394 | 0 | 270,394 |
| (8) | Other Expert Fees | 141,334 | 11,931 | 153,265 | 380,732 | 23,888 | 404,620 |
| (9) | Other Claim Expenses | 42,495 | 62 | 42,557 | 110,486 | 126 | 110,613 |
| (10) | Est. Contingency Fee | 4,895,769 | 189,753 | 5,085,522 | 11,561,981 | 408,947 | 11,970,927 |
| (11) | Total Losses and ALAE | 16,793,917 | 712,730 | 17,506,647 | 40,351,852 | 1,560,334 | 41,912,186 |
| (12) | Total Transactional Costs | 6,854,022 | 327,474 | 7,181,496 | 16,877,528 | 730,048 | 17,607,576 |
| **(13)** | **Transactional Costs as a % of Loss & ALAE** | **40.8%** | **45.9%** | **41.0%** | **41.8%** | **46.8%** | **42.0%** |



Notes:

(1) From Claim and Cost Study Report page 175 - 176, including advanced payments.
(2) From Claim and Cost Study Report page 176
(3)-(9) From Claim and Cost Study Report page 179
(10) Contingency fee is estimated as 33% * [(1) - (2)]
(11) = Sum [(1), (3) : (9)]
(12) = Sum [(2) : (10)]
(13) = (12) / (11)

**Transactional Costs in the Alberta (AB) Private Passenger Vehicle Litigation**
**Derivation of Transactional Costs Ratio by Claim Close Year**
**Claims Close Year 2017**

| | | Actual in Data | | | Trended to 2018 @ 8.5% per Annum | | |
|---|---|---|---|---|---|---|---|
| | | Accidents in AB | Accidents outside of AB | Total Alberta | Accidents in AB | Accidents outside of AB | Total Alberta |
| | | (a) | (b) | (c) | (d) | (e) | (f) |
| (1) | Total Settlement [including Item (2)] | 24,547,925 | 2,663,203 | 27,211,128 | 35,955,916 | 4,167,702 | 40,123,618 |
| (2) | Disbursements | 676,167 | 91,101 | 767,268 | 1,061,108 | 145,208 | 1,206,316 |
| (3) | Insurer's Outside Counsel Fees | 685,597 | 135,474 | 821,071 | 1,209,853 | 223,491 | 1,433,345 |
| (4) | Insurer's In-house Counsel Fees | 83,534 | 0 | 83,534 | 131,273 | 0 | 131,273 |
| (5) | Independent Adjuster Fees | 162,033 | 20,892 | 182,925 | 226,216 | 33,131 | 259,347 |
| (6) | Insurer's In-house Adjuster Fees | 1,400 | 0 | 1,400 | 3,673 | 0 | 3,673 |
| (7) | Defence Medical Reports | 75,935 | 2,205 | 78,140 | 155,875 | 3,589 | 159,464 |
| (8) | Other Expert Fees | 90,668 | 8,698 | 99,366 | 142,735 | 13,950 | 156,685 |
| (9) | Other Claim Expenses | 46,863 | 4,599 | 51,463 | 77,136 | 7,083 | 84,219 |
| (10) | Est. Contingency Fee | 7,877,680 | 848,794 | 8,726,474 | 11,515,287 | 1,327,423 | 12,842,710 |
| (11) | Total Losses and ALAE | 25,693,955 | 2,835,071 | 28,529,026 | 37,902,679 | 4,448,947 | 42,351,625 |
| (12) | Total Transactional Costs | 9,699,877 | 1,111,763 | 10,811,640 | 14,523,157 | 1,753,875 | 16,277,033 |
| **(13)** | **Transactional Costs as a % of Loss & ALAE** | **37.8%** | **39.2%** | **37.9%** | **38.3%** | **39.4%** | **38.4%** |



Notes:

(1) From Claim and Cost Study Report page 175 - 176, including advanced payments.
(2) From Claim and Cost Study Report page 176
(3)-(9) From Claim and Cost Study Report page 179
(10) Contingency fee is estimated as 33% * [(1) - (2)]
(11) = Sum [(1), (3) : (9)]
(12) = Sum [(2) : (10)]
(13) = (12) / (11)

Alberta Treasury Board and Finance

**BULLETIN**

| | |
|---|---|
| **BULLETIN NUMBER:** | **04-2016** |
| **TITLE:** | **ALBERTA STANDARD AUTOMOBILE INSURANCE POLICY FORM - TRANSPORTATION NETWORK S.P.F. No. 9** |
| **DATE:** | **June 28, 2016** |

## A. PURPOSE

The purpose of this Bulletin is to provide information about a new standard automobile insurance policy form named the Alberta Standard Automobile Form – Transportation Network S.P.F. No. 9 ("SPF9") approved for use in Alberta effective July 1, 2016. The SPF9 provides automobile insurance for Transportation Network Companies ("TNC"), and their authorized TNC drivers. The SPF9 is approved pursuant to section 551(3) of the Alberta *Insurance Act* ("Act") and is not an 'owner's policy' as this term is defined in the Act. Accordingly, not all provisions of Subpart 2 – Automobile Insurance of the Act will apply to the SPF9. A copy of the SPF9, including a declaration page and TNC Insurance Information Form, is attached.

## B. COVERAGE SUMMARY

| Use period of the vehicle | SPF9 policy coverages | Report claim to |
|---|---|---|
| Period 0: Personal use; driver is not logged onto a TNC network for the purpose of providing transportation services. | None | Only driver's own insurer |

**Superintendent of Insurance**

402 Terrace Building
9515 – 107 Street
Edmonton, AB T5K 2C3
Telephone: 780-427-8322
Facsimile: 780-420-0752
www.finance.alberta.ca

| | | |
|---|---|---|
| Period 1: Driver has logged onto a TNC network for the purpose of providing transportation services but has not accepted a ride request. | • $1,000,000 third party liability. This coverage is contingent on driver's own insurer denying coverage for an accident occurring during this Period.<br>• Statutory accident benefits as provided for in the Automobile Accident Insurance Benefits Regulations.<br>• No physical damage coverage (e.g. collision). | Both TNC insurer and driver's own insurer |
| Period 2: Driver has accepted a ride request and is en route to pick up passenger(s). | • Third party liability coverage.<br>• Statutory accident benefits as provided for in the Automobile Accident Insurance Benefits Regulations.<br>• Optional physical damage coverage (e.g. collision). | Only TNC insurer |
| Period 3: Passenger(s) are in the vehicle, being transported, and ending when the last passenger departs from the vehicle. | • Third party liability coverage.<br>• Statutory accident benefits as provided for in the Automobile Accident Insurance Benefits Regulations.<br>• Optional physical damage coverage (e.g. collision). | Only TNC insurer |

## C. INFORMATION FOR CONSUMERS USING TNC SERVICES

**The SPF9 only provides insurance coverage for rides that have been booked electronically using the TNC application. It provides no insurance coverage when passengers have street-hailed a ride.**

Even though the SPF9 is approved for use in Alberta, it does not mean that a TNC has actually purchased this policy. Before using the services of a particular TNC, be sure to confirm that the TNC and its drivers have appropriate insurance. There are various places you can confirm this information:



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Edmonton, AB T5K 2C3
Telephone: 780-427-8322
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- Check whether the TNC is properly licenced. In some municipalities, such as Edmonton and Calgary, a TNC and their driver must provide proof of appropriate automobile insurance to be licensed to operate in the municipality.
- Review a TNC's insurance policy on the TNC's website. The Superintendent of Insurance has asked TNCs to ensure their automobile insurance policy is made available for public viewing.
- An insurance company that issues the SPF9 must ensure that a TNC Insurance Information Form is provided to all drivers. You may ask the driver to show you this form, which is permitted to be displayed electronically. For more information on this form, please see section 'G' of this bulletin.
- In addition, the TNC may provide a copy of its automobile insurance policy to its authorized drivers, via the driver's smartphone application, for review by passengers.

## D. INFORMATION FOR TNC DRIVERS

If the TNC you drive for has purchased the SPF9, you are not covered while carrying street-hailed passengers or if you are transporting cargo. You are only covered for periods when you are using your vehicle for TNC operations as defined in the SPF9. As described in the Coverage Summary chart found in section 'B' of this Bulletin, coverage is more restrictive during Period 1 when you are logged into a TNC network for the purpose of providing transportation services but have not yet accepted a ride request.

**DO NOT assume that your own personal automobile insurance policy will automatically cover you when the SPF9 does not.** You are contractually obligated to notify your personal insurance company that you are a TNC driver. Your personal insurance company may decide to charge an additional premium and continue insuring you, or, as is permitted, may decide to terminate your policy. To locate an insurance company who may accommodate you using your vehicle for TNC driving, please contact your insurance broker or agent.

## E. INFORMATION FOR TNCs

The SPF9 is designed to provide coverage only during the time a vehicle is used as a TNC automobile. It also can provide coverage for physical damage to TNC vehicles, should the insurer offer it, and should a TNC choose to purchase it. To purchase the SPF9, please check with your insurance broker. Insurers are not obligated to offer the SPF9; however, if they do, they are expected to meet the minimums set out in the *Traffic Safety Act*, the *Insurance Act,* and their associated regulations. If you have purchased the SPF9, the Superintendent of Insurance expects that you will ensure a


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copy of your SPF9 is available for public view on your website. Because there are coverage limitations, be sure to communicate these limitations to your TNC drivers, so they may take steps to ensure they have arranged insurance for the period when the coverage limitations apply (see chart above). In a claims coverage investigation or for underwriting purposes, it is expected that a TNC and its insurer will cooperate with other insurers to facilitate the exchange of information, including the dates, times and circumstances of an accident involving a TNC driver and the precise times that the TNC driver logged in and was logged out of the TNC's digital platform. The SPF9 is not the only way to appropriately insure TNC automobiles, and depending on how the TNC is structured, other approved automobile insurance forms may be appropriate. Please discuss these with your insurance broker.

## F. INFORMATION FOR INSURANCE COMPANIES AND INSURANCE BROKERS

This SPF9 is now available for use in Alberta. There is also an approved standard application form (SAF9) for TNCs to use when applying for the SPF9. A copy of the SAF9 is attached. Fleet rating programs may be used with the SPF9. Insurers should contact the Automobile Insurance Rate Board to determine if they need approval for premiums associated with this policy form. The SPF9 contingent coverage for Period 1 provides for $1,000,000 third party liability coverage.

The following standard endorsement forms are approved for use with the SPF9:

1. SEF#44 Family Protection Endorsement
2. SEF#23a Mortgage endorsement
3. SEF#21a & 21b Blanket basis fleet endorsements
4. SEF#13D limited glass
5. SEF#13H hail deletion
6. SEF#20 loss of use
7. SEF#43R&L limited waiver of depreciation

In a claims coverage investigation, the Superintendent of Insurance expects a TNC insurer will cooperate with other insurers involved in the claims coverage investigation to facilitate the exchange of information, including the dates, times and circumstances of an accident involving a TNC driver and the precise times that the TNC driver was logged in and was logged out of the TNC's digital platform.



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## G. TNC INSURANCE INFORMATION FORM

The SPF9 is not an 'owner's policy,' and as such the TNC insurer is not obligated to provide a Financial Responsibility Card (pink card). Instead, included on page two of the SPF9 (reproduced in Appendix 1 below), the Superintendent of Insurance has stipulated the minimum information which insurers must provide to insured TNC drivers either directly or through the TNC. This form is not intended to replace the driver's own pink card: each driver should have both a pink card for the vehicle owner's policy, and a TNC Insurance Information Form for the TNC policy. The SPF9 TNC Insurance Information Form is permitted to be in electronic or paper form. The driver is expected to provide this form to all claimants and potential claimants for all accidents occurring during Periods 1, 2, and 3. Because the personal automobile insurance of TNC drivers provides coverage when TNC drivers are not using their vehicles for TNC operations, in the event of an accident that occurs during such a period, TNC drivers must still produce their financial responsibility card to any peace officer, witnesses or anyone sustaining loss or injury.

If you have any questions about this Bulletin, please contact one of our compliance officers at 780-643-2237, or by email at tbf.insurance@gov.ab.ca.

[ORIGINAL SIGNED]

Ms. Nilam Jetha
Superintendent of Insurance

**Attachments:**

- SPF 9: Alberta Standard Automobile Form – Transportation Network (includes declaration page and TNC Insurance Information Form)
- SAF 9: Approved Standard Application Form (for TNCs to use when applying for the SPF9)



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## DECLARATION OF AUTOMOBILE INSURANCE ALBERTA, CANADA
## STANDARD AUTOMOBILE FORM – TRANSPORTATION NETWORK S.P.F. No. 9

# INSURANCE COMPANY NAME

(HEREINAFTER CALLED THE INSURER)

| AGENT/BROKER | No. | POLICY NUMBER |
|---|---|---|
| | | |

| ITEMS | INSURED'S FULL NAME AND POSTAL ADDRESS | | FROM: | DATE: | | | TO: | DATE: | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | | 2. POLICY PERIOD | 12:01 AM | Y Y Y Y | M M | D D | 12:01 AM | Y Y Y Y | M M | D D |
| | | | ALL TIMES ARE LOCAL TIMES AT ALBERTA, CANADA | | | | | | | |

| 3. | PARTICULARS OF THE DESCRIBED AUTOMOBILE(S) |
|---|---|
| | |

**4. INSURING AGREEMENTS**

| | SECTION A | SECTION B | | | | SECTION C | | | |
|---|---|---|---|---|---|---|---|---|---|
| PERILS | LEGAL LIABILITY FOR BODILY INJURY TO OR DEATH OF ANY PERSON OR DAMAGE TO PROPERTY (EXCLUSIVE OF COSTS AND POST JUDGMENT INTEREST) FOR LOSS OR DAMAGE FROM BODILY INJURY TO OR THE DEATH OF ONE OR MORE PERSONS AND FOR THE LOSS OR DAMAGE TO PROPERTY REGARDLESS OF THE NUMBER OF CLAIMS ARISING FROM ANY ONE ACCIDENT. | PAYMENTS FOR DEATH OR BODILY INJURY | | | | THIS POLICY CONTAINS A PARTIAL PAYMENT OF LOSS CLAUSE | | | |
| LIMITS AND AMOUNTS IN DOLLARS | | AS STATED IN SECTION B OF THE POLICY | | | UNINSURED MOTORIST | 1. ALL PERILS | 2. COLLISION OR UPSET | 3. COMPREHENSIVE (EXCLUDING COLLISION OR UPSET) | 4. SPECIFIED PERILS (EXCLUDING COLLISION OR UPSET) |
| | | EACH PERSON SUB-SEC. 1 | PRINCIPAL SUM SUB-SEC. 2 | WEEKLY BENEFIT MAXIMUM | SUB-SEC. 3 | AMOUNT DEDUCTIBLE ON EACH SEPARATE CLAIM EXCEPT FOR LOSS OR DAMAGE BY FIRE OR LIGHTNING OR THEFT OF THE ENTIRE AUTOMOBILE | | | |
| | | | | | AS STATED IN SECTION B OF THE POLICY | | | | |
| PREMIUM IN DOLLARS | | | | | | | | | |

| ENDORSEMENT NUMBERS ATTACHING | ENDORSEMENT No. | ENDORSEMENT DESCRIPTION | ENDORSEMENT PREMIUM | MINIMUM RETAINED PREMIUM | TOTAL POLICY PREMIUM |
|---|---|---|---|---|---|
| | | | | $ | $ |

***Remarks:***

**This is your Declaration of Automobile Insurance. Contact your Broker/Agent with any questions or if you require clarification regarding your coverage choices.**

Alberta SPF9 TNC Insurance Information Form

Name of insured: _____

Name of insured driver: _____

Name of Insurer: _____

Insurer Alberta address: _____

Policy #: _____

Effective date: _____

Expiration date: _____

Authorized vehicle year, make, model: _____

To report a claim directly to the insurer:
By Phone: _____
By Email: _____
By regular mail: _____

**ALBERTA STANDARD AUTOMOBILE FORM – TRANSPORTATION NETWORK**
**S.P.F. No. 9**

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## INSURING AGREEMENT

In consideration of the payment of the premium specified and of the statements contained in the application and subject to the limits, terms, conditions, definitions, exclusions stated in this policy and to the provisions of any endorsement attached to this policy.

**The coverages provided by this policy are limited and they only apply to accidents that arise from the use or operation of the automobile as a transportation network automobile. Damages caused in any accident where the automobile is being used for a purpose other than as a transportation network automobile are not recoverable under this insurance policy.**

## SECTION A – THIRD PARTY LIABILITY

The insurer agrees to indemnify the insured against the liability imposed by law upon the insured for loss or damage arising from the use or operation of the automobile as a transportation network automobile and resulting from bodily injury to or the death of any person or damage to property.

For the purposes of this section, use or operation of the automobile as a transportation network automobile means:

(a) anytime a transportation network driver operating a transportation network automobile is logged onto a transportation network for the purposes of accepting requests for transportation services for compensation from prospective passenger(s); or

(b) anytime from the moment a transportation network driver operating a transportation network automobile has accepted a ride request through a transportation network, continuing while such transportation network driver is enroute to pick up prospective passenger(s) to provide transportation services for compensation, and ending when the first passenger enters the transportation network automobile or a trip is cancelled whichever is later; or

(c) anytime from the moment a transportation network driver operating a transportation network automobile has passenger(s) in a transportation network automobile, continuing while such passenger(s) are being transported for compensation, and ending when the last passenger departs from the transportation network automobile.

**The insurer shall not be liable under this section,**

(a) for any liability imposed by any workers' compensation law upon any person insured by this section; or

(b) for loss or damage resulting from bodily injury to or the death of any employee of any person insured by this section while engaged in the operation or repair of the automobile; or

(c) for loss or damage to any property owned or rented by any person insured by this Policy; or

(d) for any amount in excess of the limit(s) stated in section A of item 4 of the application and expenditures provided for in the Additional Agreements of this section; or

(e) for any liability arising from contamination of property carried in the automobile; or

(f) for any liability resulting from use or operation of the automobile for any purpose other than as a transportation network automobile; or

(g) for any loss or damage resulting from bodily injury to or death of any person or loss or damage to property sustained while a transportation network driver operating a transportation network automobile is logged onto a transportation network for the purposes of accepting requests for transportation services for compensation from prospective passenger(s) but has not accepted a request to transport passenger(s) unless the insurer of an owner's policy issued to a transportation network driver or transportation network automobile owner has denied liability for the loss or damage. Where the insurer of an owner's policy issued to a transportation network driver or transportation network automobile owner has denied liability for the loss or damage, the insurer's liability is limited to $1,000,000 and the expenditures provided for in the Additional Agreements of this section.

**See also General Provisions, Definitions, Exclusions and Statutory Conditions of this Policy**

## ADDITIONAL AGREEMENTS OF INSURER

Where indemnity is provided by this section the Insurer shall,

(1) upon receipt of notice of loss or damage caused to persons or property, serve any person insured by this Policy by an investigation and negotiations with the claimant and by settlement of any resulting claims that are expedient by the insurer; and

(2) defend in the name and on behalf of any person insured by this Policy and at the cost of the Insurer any civil action which may at any time be brought against any person insured on account of such loss or damage to persons or property; and

(3) pay all costs taxed against any person insured by this Policy in any civil action defended by the Insurer and any interest accruing after entry of judgment upon that part of the judgment which is within the limit(s) of the Insurer's liability; and

(4) in the case of an injury to a person, reimburse any person insured by this Policy for outlay for any medical aid as may be immediately necessary at the time; and

(5) be liable up to the minimum limit(s) prescribed for that province or territory of Canada in which the accident occurred, if that limit(s) is higher than the limit(s) stated in Section A of this Policy; and

(6) not set up any defence to a claim that might not be set up if the policy were a motor vehicle liability policy issued in the province or territory of Canada in which the accident occurred.

## AGREEMENTS OF THE INSURED

Where indemnity is provided by this section, every person insured by this Policy:

(1) by acceptance of this policy, constitutes and appoints the insurer their irrevocable attorney to appear and defend in any province or territory of Canada in which action is brought against the insured arising out of the ownership, use or operation of the automobile as a transportation network automobile;

(2) shall reimburse the Insurer, upon demand, in the amount which the Insurer has paid by reason of the provisions of any statute relating to automobile insurance and which the Insurer would not otherwise be liable to pay under the Policy.

## SECTION B – ACCIDENT BENEFITS

The Insurer agrees to pay the benefits outlined in this Section B to or with respect to each insured person as defined in this section who sustains bodily injury or death directly and independently of all other causes by an accident arising out of the use or operation of the automobile as a transportation network automobile.

**The coverage for benefits under this Section B is primary until such time as the insurer of an owner's policy issued to a transportation network driver or transportation network owner accepts liability for the benefits.**

For the purposes of this section, use or operation of the automobile as a transportation network automobile means:

(a) anytime a transportation network driver operating a transportation network automobile is logged onto a transportation network for the purposes of accepting requests for transportation services for compensation from prospective passenger(s); or

(b) anytime from the moment a transportation network driver operating a transportation network automobile has accepted a ride request through a transportation network, continuing while such transportation network driver is enroute to pick up prospective passenger(s) to provide transportation services for compensation, and ending when the first passenger enters the transportation network automobile or a trip is cancelled whichever is later; or

(c) anytime from the moment a transportation network driver operating a transportation network automobile has passenger(s) in a transportation network automobile, continuing while such passenger(s) are being transported for compensation, and ending when the last passenger departs from the transportation network automobile.

**Subsection 1 - Medical Payments**

(1) In respect of

(a) injuries to which the *Diagnostic and Treatment Protocols Regulation* applies and that are diagnosed and treated in accordance with the protocols under that Regulation, the expenses payable for any service, diagnostic imaging, laboratory testing, specialized testing, supply, treatment, visit, therapy, assessment or making a report, or any other activity or function authorized under that Regulation, and payment must be made in the manner and subject to the provisions of that Regulation, notwithstanding anything to the contrary in Section B, and

(b) injuries

(i) to which the *Diagnostic and Treatment Protocols Regulation* applies but that are not diagnosed and treated in accordance with the protocols under that Regulation,

(ii) to which the *Diagnostic and Treatment Protocols Regulation* ceases to apply but for which the insured person wishes to make a claim under provision (3) of “Special Provisions, Definitions, and Exclusions of Section B”, and

(iii) to which Section B applies, other than those injuries referred to in subclauses (i) and (ii),

all reasonable expenses incurred within 2 years from the date of the accident as a result of those injuries for necessary medical, surgical, chiropractic, dental, hospital, psychological, physical therapy, occupational therapy, massage therapy, acupuncture, professional nursing and ambulance services and, in addition, for other services and supplies that are, in the opinion of the insured person’s attending physician and in the opinion of the Insurer’s medical advisor, essential for the treatment or rehabilitation of the injured person,

to the limit of $50,000 per person.

(2) Notwithstanding provision (1),

(a) expenses payable in respect of chiropractic services provided under provision (1)(b) are limited to $750 per person;

(b) expenses payable in respect of massage therapy services provided under provision (1)(b) are limited to $250;

(c) expenses payable in respect of acupuncture services provided under provision (1)(b) are limited to $250.

(3) Subject to provision (4), the Insurer is not liable under this provision for those portions of expenses payable or recoverable under any medical, surgical, dental or hospitalization plan or law or, except for similar insurance provided under another automobile insurance contract, under any other insurance contract or certificate issued to or for the benefit of any insured person.

(4) Except for those portions of expenses payable or recoverable under any law, provision (3) does not apply to expenses payable or recoverable for an injury to which the *Diagnostic and Treatment Protocols Regulation* applies.

## Subsection 2 - Death, Grief Counselling, Funeral and Total Disability

### Part 1 - Death, Grief Counselling and Funeral Benefits

Subject to the provisions of this Part 1, for death, a payment of a principal sum - based on the age and status at the date of the accident of the deceased in a household where the head of the household or the spouse/adult interdependent partner or dependants survive - of the following amount:

| Age of Deceased at Date of Accident | Status of Deceased at Date of Accident | | |
|---|---|---|---|
| | Head of Household | Spouse/Adult Interdependent Partner | Dependent Relative |
| Up to age of 4 years | - | - | $1000 |
| 5 to 9 years | - | - | 2000 |
| 10 to 17 years | $10 000 | $10 000 | 3000 |

| | | | |
|---|---|---|---|
| 18 to 64 years | 10 000 | 10 000 | 2000 |
| 65 to 69 years | 10 000 | 10 000 | 2000 |
| 70 years and over | 10 000 | 10 000 | 1000 |

In addition, funeral service expenses up to the amount of $5000 in respect of the death of any one person.

In addition, grief counselling expenses up to the amount of $400 per family in respect of the death of any one person.

In addition, with respect to the death of the head of household,

(a) where there are 2 or more survivors who are

(i) a spouse/adult interdependent partner and one or more dependent relatives, or

(ii) 2 or more dependent relatives,

the principal sum payable is increased 20% for each survivor other than the first, and(b) where there is a spouse/adult interdependent partner or dependent relative survivor living in the household, the death benefit is increased

(i) by $15 000 for the first spouse/adult interdependent partner or dependent relative survivor, and

(ii) by a subsequent $4000 for each of the remaining survivors.

**For the Purposes of this Part 1**

(1) “head of household” means that member of a household with the largest income in the year preceding the date of the accident;

(2) “dependent relative” means a person

(a) under the age of 18 years for whose support the head of household or the spouse/adult interdependent partner of the head of household (or both of them) is legally liable and who is dependent upon either or both of them for financial support; or

(b) 18 years of age or over and residing in the same dwelling premises as the head of household who, because of mental or physical infirmity, is principally

dependent on the head of household or the spouse/adult interdependent partner of the head of household (or both the head of household and the spouse/adult interdependent partner) for financial support;

(2.1) If the head of household has both a spouse and an adult interdependent partner, a reference to spouse/adult interdependent partner or surviving spouse/adult interdependent partner means

(a) the spouse or surviving spouse, or

(b) the adult interdependent partner or surviving adult interdependent partner,

living in the same dwelling premises as the head of household.

(3) The total sum payable shall be paid with respect to death of head of household or spouse/adult interdependent partner to the surviving spouse/adult interdependent partner. If there is no surviving spouse/adult interdependent partner in the household, no amount shall be payable unless there are surviving dependent relatives, and in that event the total sum payable shall be divided equally among the surviving dependent relatives;

(4) The total amount payable with respect to death due to a common disaster of head of household and spouse/adult interdependent partner shall be paid equally to surviving dependent relatives;

(5) The sum payable with respect to the death of a dependent relative shall be paid to the head of household or, if he does not survive, to the surviving spouse/adult interdependent partner of the head of household but, if neither the head of household nor the spouse/adult interdependent partner survives, no amount is payable;

(6) Amounts payable under this Part I shall be paid only to a person who is alive 60 days after the death of the insured person;

(7) The amount payable under this Part I for the death of any person shall be reduced by the amount of any payments made to or for such person with respect to the same accident under Part II, Total Disability;

(8) The amount payable under this Part for grief counselling is payable to the spouse/adult interdependent partner or other immediate family member of the deceased in respect of grief counselling for the immediate family members of an insured person who dies as a result of the accident.

**Part II - Total Disability**

A weekly benefit for the period during which the injury shall wholly and continuously disable such insured person, provided

(a) such person was employed at the date of the accident;

(b) within 60 days from the date of the accident such injury prevents him from performing any and every duty pertaining to his occupation or employment;

(c) no benefit shall be payable for the first seven days of such disability or for any period in excess of 104 weeks.

**Amount of Weekly Benefit -** The weekly benefit payable shall be the lesser of:

(a) $400 per week, and

(b) 80% of the average gross weekly earnings, less any payments for loss of income from occupation or employment received by or available to such insured person under Subsection 2(A) of this Section B.

The above benefits shall be subject to the terms of provision (3) below.

**For the purpose of this Part II**

(1) an insured person who is 18 years of age or over and who is not engaged in an occupation or employment for wages or profit and is completely incapacitated and unable to perform any of his or her household duties shall, while so incapacitated, receive $135 per week for not more than 26 weeks;

(1.1) average gross weekly earnings is the greater of

(a) average gross weekly earnings from an occupation or employment for the 4 weeks preceding the accident, and

(b) average gross weekly earnings from an occupation or employment for the 52 weeks preceding the accident;

(2) a person shall be deemed to be employed

(a) if actively engaged in occupation or employment for wages or profit at the date of the accident, or

(b) if 18 years of age or over, so engaged for any six months during the 12 months preceding the date of the accident.

(3) if the benefits for loss of time payable under this Part, together with benefits for loss of time under another contract, including a contract of group accident insurance and a life insurance contract providing disability insurance, exceed the average gross weekly earnings of the insured person, the weekly benefit shall be calculated in accordance with the following formula:

$$WB = \frac{80\% \text{ of } WE}{PB + OB} \times PB$$

where

WB is the weekly benefit,

WE is the average gross weekly earnings of the insured person,

PB is the lesser of $300 and 80% of WE,

OB is the total of all other weekly benefits payable to the insured person under other contracts, including a contract of group accident insurance and a life insurance contract providing disability insurance, excluding benefits under the *Employment Insurance Act* (Canada) and the *Canada Pension Plan* (Canada);

(4) the disability of the insured person shall be certified by a duly qualified medical practitioner, if so required by the Insurer.

**Subsection 2(A) - Supplemented Benefits Respecting Accidents Occurring Outside Alberta in a No-fault Jurisdiction**

(1) In this Subsection, 2(A)

(a) "accident" means an event resulting in bodily injury caused by the use or operation of the automobile as a transportation network automobile;

(b) "applicable laws" means, with respect to a no-fault jurisdiction, the laws in force from time to time governing the system of no-fault automobile insurance in that jurisdiction;

(c) "insured person" means an individual who is a resident of Alberta and who

(i) is an occupant of the automobile which is being used or operated as a transportation network automobile at the time of the accident, or

(ii) while a pedestrian, is struck by the automobile or a newly acquired or temporary substitute automobile as defined in this policy, which is being used or operated as a transportation network automobile;

(d) "no-fault jurisdiction" means the Province of Quebec, Ontario, Manitoba or Saskatchewan;

(e) "pedestrian" means an individual who is not an occupant of an automobile;

(f) "resident of Alberta" means an individual who

(i) is authorized by law to be or to remain in Canada and is living and ordinarily present in Alberta, and

(ii) meets the criteria for non-residency in the no-fault jurisdiction established by the applicable laws of the no-fault jurisdiction.

(2) The definition of "insured person" under the heading Special Provisions, Definitions, and Exclusions of Section B does not apply to this Subsection.

(3) Where an insured person suffers personal injury as a result of an accident occurring in a no-fault jurisdiction, the insurer agrees to pay to the insured person the amount that would be payable under the applicable laws of the no-fault jurisdiction as if the insured person were a resident of the no-fault jurisdiction.

(4) For the purposes of calculating an amount payable under (3) in respect of an accident occurring in Quebec, references in the *Automobile Insurance Act* (Quebec) to other statutes or regulations of Quebec used to calculate an amount payable under (3) shall be read as references to corresponding Alberta statutes or regulations or federal statutes or regulations that apply in Alberta.

(5) In any claim or action in Alberta arising out of an accident in Alberta, the insurer agrees not to exercise its right of subrogation against a resident of Manitoba or Saskatchewan in respect of Section B - Accident Benefits paid to a resident of Alberta under an automobile insurance policy issued in Alberta.

(6) No exclusion or limitation in Section B or in the General Provisions, Definitions and Exclusions and the Statutory Conditions of this policy may be raised by the insurer in respect of a claim by an insured person under (3).

**Subsection 3 – Uninsured Motorist Cover**

All sums which every insured person shall be legally entitled to recover as damages for bodily injury and all sums which any other person shall be legally entitled to recover as

damages because of the death of any insured person, from the owner or driver of an uninsured or unidentified automobile as defined herein.

(1) **The Insurer shall not be liable under this subsection,**

(a) to any person who has a right of recovery under an unsatisfied judgment or similar fund or plan in effect in any jurisdiction of Canada or the United States of America;

(b) to any person who, without the written consent of the Insurer, makes directly or through his representative any settlement with or prosecutes to judgment any action against any person or organization which may be legally liable therefor;

(c) for any amount in excess of the minimum limit(s) for automobile bodily injury liability insurance applicable in the jurisdiction in which the accident occurs regardless of the number of persons so injured or killed, but in no event shall such limit(s) exceed the minimum limit(s) applicable in the jurisdiction stated in Item 1 of the application.

(2) **Uninsured automobile defined**

An “uninsured automobile” under this section means an automobile with respect to which neither the owner nor driver thereof has applicable and collectible bodily injury liability insurance for its ownership, use or operation, but shall not include an automobile owned by or registered in the name of

(a) the named insured or any transportation network driver or any person residing in the same dwelling premises of the transportation network driver; or

(b) the governments of Canada or the United States of America or any political sub-division thereof or any agency or corporation owned or controlled by any of them; or

(c) any person who is an authorized self-insurer within the meaning of a financial or safety responsibility law; or

(d) any person who has filed a bond or otherwise given proof of financial responsibility with respect to his liability for the ownership, use or operation of automobiles.

(3) **Unidentified automobile defined**

An “unidentified” automobile under this subsection means an automobile which causes bodily injury or death to an insured person arising out of physical contact of such automobile with the automobile which is being used or operated as a transportation network automobile of which the insured person is an occupant at the time of the accident, provided

(a) the identity of either the owner or driver of such automobile cannot be ascertained, and

(b) the insured person or someone on his behalf has reported the accident within 24 hours to a police, peace or judicial officer or to an administrator of motor vehicle laws and shall have filed with the Insurer within 30 days thereafter a statement under oath that the insured person or his legal representative has a cause or causes of action arising out of such accident for damages against a person or persons whose identity cannot be ascertained and setting forth the facts in support thereof; and

(c) at the request of the Insurer, the insured person or his legal representative makes available for inspection the automobile of which the insured person was an occupant at the time of the accident.

(4) **Limitation of liability**

(a) If claim is made under this subsection and claim is also made against any person who is an insured under section A – Third Party Liability of this Policy, any payment under this subsection shall be applied in reduction of any amount which the insured person may be entitled to recover from any person who is insured under section A;

(b) Any payment made under section A or under subsections 1 or 2 of section B of this Policy to an insured person hereunder shall be applied in reduction of any amount which such person may be entitled to recover under this subsection.

(5) **Determination of legal liability and amount of damages**

The determination as to whether the insured person shall be legally entitled to recover damages and if so entitled, the amount thereof, shall be made by agreement between the insured person and the Insurer.

If any difference arises between the insured person and the Insurer as to whether the insured person is legally entitled to recover damages and, if so entitled, as to the amount thereof these questions shall be submitted to arbitration of some person to be chosen by both parties, or if they cannot agree on one person, then by two persons, one to be chosen by the insured person and the other by the Insurer and a third person to be appointed by the persons so chosen. The submission shall be subject to the provisions of The Arbitration Act and the award shall be binding upon the parties.

(6) Notice of legal action

If, before the Insurer makes payment of loss hereunder, the insured person or his representative shall institute any legal action for bodily injury or death against any other person owning or operating an automobile involved in the accident, a copy of the writ of summons or other process served in connection with such legal action shall be forwarded immediately to the Insurer.

## Special Provisions, Definitions, and Exclusions of Section B

(1) **"INSURED PERSON" DEFINED**

In this section, the words "insured person" mean

(a) any person while an occupant of the automobile or of a newly acquired or temporary substitute automobile as defined in this policy and which is being used or operated as a transportation network automobile at the time of the accident;

(b) in subsection 1 and 2 of Section B only, any person, not the occupant of an automobile or of railway rolling-stock that runs on rails, who is struck in Canada, by the automobile or a newly acquired or temporary substitute automobile as defined in the policy and which is being used or operated as a transportation network automobile at the time of the accident.

(1.1) **"Prescribed claim form" defined** - In this section, the words "prescribed claim form" mean a form prescribed by the Minister under section 803 of the *Insurance Act*.

(1.2) **"Spouse/adult interdependent partner" defined** - In this section, the words "spouse/adult interdependent partner" mean the spouse or adult interdependent partner, as the case may be.

(2) **EXCLUSIONS**

(a) The Insurer shall not be liable under provision (1) of subsection 1, nor under Part II of subsection 2 of this section B for bodily injury to any person

(i) resulting from the suicide of such person or attempt thereat, whether sane or insane; or

(ii) who is entitled to receive the benefits of any workmen's compensation law or plan as a result of the accident; or

(iii) where the person at the time of the accident is engaged in a race or speed test; or

(iv) caused directly by sickness or disease; or

(v) who is using the automobile for any illicit or prohibited trade or transportation.

(b) The Insurer shall not be liable under Part II of Subsection 2 of this Section B for Bodily injury

(i) sustained by any person who is convicted of an offence under section 253(b) of The Criminal Code (driving with more than 80 milligrams of alcohol in 100 millilitres of blood) or under section 253(a) of The Criminal Code (driving while ability to drive impaired by alcohol or a drug) occurring at the time of the accident, or

(ii) sustained by any person driving the automobile which is being used or operated as a transportation network automobile who is under the age prescribed by the law of the jurisdiction in which the accident occurs as being the minimum age at which a licence or permit to drive the automobile may be issued to him; or

(iii) sustained by any person driving the automobile which is being used or operated as a transportation network automobile who is not for the time being either authorised by law or qualified to drive the automobile.

(3) NOTICE AND PROOF OF CLAIM

Subject to the *Diagnostic and Treatment Protocols Regulation*, the insured person or the insured person's agent, or the person otherwise entitled to make a claim or that person's agent, shall

(a) deliver personally,

(b) mail,

(c) fax, or

(d) send by e-mail if both parties have agreed to this method of sending and receiving notices and other documents,

a properly completed prescribed claim form, containing at least the information referred to in provision (3.1), to the chief agency or head office of the Insurer in Alberta within 30 days of the accident, or if giving notice within 30 days is not reasonable, as soon as practicable after that.

(3.1) **Contents of Claim Form** - The completed prescribed claim form must include

(a) details of the injury, and

(b) details of the accident that are within the personal knowledge of the insured person.

(3.2) **Responsibility for Expenses Related to Completion of Claim Form** - The Insurer shall pay all expenses incurred by or on behalf of the insured person in completing the medical report portion of the prescribed claim form.

(3.3) **Total Disability Claim** - With respect to a total disability claim, the insured person shall, if so required by the Insurer, furnish a certificate from a duly qualified medical practitioner as to the cause and nature of the accident for which the claim is made and as to the duration of the disability caused thereby.

(4) **Medical Reports** - Subject to provision (4.1), the Insurer has the right and the claimant shall afford to a duly qualified medical practitioner named by the Insurer an opportunity to examine the person of the insured's person when and as often as it reasonably requires while the claim is pending, and also, in the case of the death of the insured person, to make an autopsy subject to the law relating to autopsies.

(4.1) **Exemption** - The Insurer has no right and the claimant is under no obligation under provision (4) with respect to

(a) injuries to which the Diagnostic and Treatment Protocols Regulation applies during the period and with respect to any service, diagnostic imaging, laboratory testing, specialized testing, supply, treatment, visit, therapy, assessment, making a report or other activity or function authorized under that Regulation;

(b) subject to provision (4.2), any other injuries for which the following services are provided:

(i) chiropractic services;

(ii) massage therapy services;

(iii) acupuncture services;

(iv) the following services to the extent of the specified limit:

(A) psychological services, up to $600 per person;

(B) physical therapy services, up to $600 per person;

(C) occupational therapy services, up to $600 per person.

(4.2) Non-application - Provision (4.1)(b) does not apply to those injuries to which the Diagnostic and Treatment Protocols Regulation ceases to apply.

(5) RELEASE

Notwithstanding any release provided for under the relevant sections of the *Insurance Act* (Alberta), the insurer may demand, as a condition precedent to payment of any amount under Section B of the Policy a release in favour of the insured and the Insurer from liability to the extent of such payment from the insured person or his personal representative or any other person.

(6) WHEN MONEYS PAYABLE

(a) Except for the expenses authorized to be paid in accordance with the *Diagnostic and Treatment Protocols Regulation*, all amounts payable under Section B other than benefits under Part II of Subsection 2 shall be paid by the Insurer within 60 days after it has received a completed prescribed claim form. The initial benefits for loss of time under Part II of Subsection 2 shall be paid within 30 days after the Insurer has received the completed prescribed claim form, and payments shall be made thereafter within each 30-day period while the Insurer remains liable for payments if the insured person, whenever required to do so, furnishes, prior to payment, proof of continuing disability.

(b) No person shall bring an action to recover the amount of a claim under this section unless the requirements of provisions (3) and (4) are complied with, nor until the amount of the loss has been ascertained as provided in this section.

(c) Every action or proceeding against the Insurer for the recovery of a claim under this Section B must be commenced not later than 2 years after the cause of action against the insurer arose.

**See also General Provisions, Definitions, Exclusions, and Statutory Conditions of this policy.**

## SECTION C – LOSS OF OR DAMAGE TO INSURED AUTOMOBILE

The insurer agrees to indemnify the Insured against direct and accidental loss of or damage to the automobile, including its equipment while the automobile is being used or operated as a transportation network automobile.

For the purposes of this section, use or operation of the automobile as a transportation network automobile means:

(a) anytime from the moment a transportation network driver operating a transportation network automobile has accepted a ride request through a transportation network, continuing while such transportation network driver is enroute to pick up prospective passenger(s) to provide transportation services for compensation, and ending when the first passenger enters the transportation network automobile or a trip is cancelled whichever is later; or

(b) anytime from the moment a transportation network driver operating a transportation network automobile has passenger(s) in a transportation network automobile, continuing while such passenger(s) are being transported for compensation, and ending when the last passenger departs from the transportation network automobile.

Insurance under this Section C is for those perils for which a premium is specified in item x of the application.

**Subsection 1 – ALL PERILS – from all perils;**

**Subsection 2 – COLLISION OR UPSET – caused by collision with another object or by upset;**

**Subsection 3 – COMPREHENSIVE – from any peril other than by collision with another object or by upset;**

The words “another object” as used in this subsection 3 shall be deemed to include (a) a vehicle to which the automobile, which is being used or operated as a transportation network automobile, is attached and (b) the surface of the

ground and any object therein or thereon. Loss or damage caused by missiles, falling or flying objects, fire, theft, explosion, earthquake, windstorm, hail, rising water, malicious mischief, riot or civil commotion shall be deemed loss or damage caused by perils for which insurance is provided under this subsection 3.

**Subsection 4 – SPECIFIED PERILS – caused by fire, lightning, theft or attempt thereat, windstorm, earthquake, hail, explosion, riot or civil commotion, falling or forced landing of aircraft or of parts thereof, rising water, or the stranding, sinking, burning, derailment or collision of any conveyance in or upon which the automobile, which is being used or operated as a transportation network automobile, is being transported on land or water;**

## DEDUCTIBLE CLAUSE

Each occurrence causing loss or damage covered under any subsection of Section C except loss or damage caused by fire or lightning or theft of the entire automobile, which is being used or operated as a transportation network automobile, covered by such subsection, shall give rise to a separate claim in respect of which the Insurer's liability shall be limited to the amount of loss or damage in excess of the amount deductible, if any, stated in the applicable subsection of section C of Item 4 of the application.

## EXCLUSIONS

**The Insurer shall not be liable,**

(1) under any subsection of Section C for loss or damage

(a) to tires or consisting of or caused by mechanical fracture or breakdown of any part of the automobile or by rusting, corrosion, wear and tear, freezing, or explosion within the combustion chamber, unless the loss or damage is coincident with other loss or damage covered by such subsection or is caused by fire, theft or malicious mischief covered by such subsection; or

(b) caused by the conversion, embezzlement, theft or secretion by any person in lawful possession of the automobile under a mortgage, conditional sale, lease or other similar written agreement; or

(c) caused by the voluntary parting with title or ownership, whether or not induced to do so by any fraudulent scheme, trick, device or false pretense; or

(d) caused directly or indirectly by contamination by radioactive material; or

(e) to contents of trailers or to rugs or robes; or

(f) to tapes and equipment for use with a tape player or recorder when such tapes or equipment are detached therefrom; or

(g) where the insured drives or operates the automobile

(i) while under the influence of intoxicating liquor or drugs to such an extent as to be for the time being incapable of the proper control of the automobile; or

(ii) while in a condition for which he is convicted of an offence under section 253 of the Criminal Code (Canada) or under or in connection with circumstances for which he is convicted of an offence under section 254 of the Criminal Code (Canada); or

(h) where the insured permits, suffers, allows or connives at the use of the automobile by any person contrary to the provisions of (g);

(2) under subsections 3 (Comprehensive), 4 (Specified Perils) only, for loss or damage caused by theft by any person or persons residing in the same dwelling premises as the Insured, or by any employee of the Insured engaged in the operation, maintenance or repair of the automobile whether the theft occurs during the hours of such service or employment or not.

**See also General Provisions, Definitions, Exclusions and Statutory Conditions of this Policy**

## ADDITIONAL AGREEMENTS OF INSURER

(1) Where loss or damage arises from a peril for which a premium is specified under a subsection of this Section, the Insurer further agrees:

(a) to pay general average, salvage and fire department charges and customs duties of Canada or of the United States of America for which the Insured is legally liable;

(b) to waive subrogation against every person who, with the insured's consent, has care, custody or control of the automobile, provided always that this waiver shall not apply to any person (1) having such care, custody or control in the course of the business of selling, repairing, maintaining, servicing, storing or parking automobiles, or (2) who has (i) committed a breach of any condition of this policy or (ii) driven or operated the automobile in the

circumstances referred to in (i) or (ii) of paragraph (g) of the Exclusions to Section C of this policy;

(c) to indemnify the Insured and any other person who personally drives a temporary substitute automobile as defined in the General Provisions of this Policy against the liability imposed by law or assumed by the Insured or such other person under any contract or agreement for direct and accidental physical loss or damage to such automobile and arising from the care, custody and control thereof; provided always that:

(i) such indemnity is subject to the deductible clause and exclusions of each such subsection;

(ii) if the owner of such automobile has or places insurance against any peril insured by this section, the indemnity provided herein shall be limited to the sum by which the deductible amount, if any, of such other insurance exceeds the deductible amount stated in the applicable subsection of this Policy;

(iii) the Additional Agreements under section A of this Policy shall insofar as they are applicable, extend to the indemnity provided herein.

(2) Loss of Use by Theft – Where indemnity is provided under subsections 1, 3 or 4 of section C hereof the Insurer further agrees, following a theft of the entire automobile covered thereby, to reimburse the Insured for expense not exceeding $25.00 for any one day nor totalling more than $750.00 incurred for the rental of a substitute automobile including taxicabs and public means of transportation.

Reimbursement is limited to such expense incurred during the period commencing seventy-two hours after such theft has been reported to the Insurer or the police and terminating, regardless of the expiration of the policy period, (a) upon the date of the completion of repairs to or the replacement of the property lost or damaged, or (b) upon such earlier date as the insurer makes or tenders settlement for the loss or damage caused by such theft

## GENERAL PROVISIONS, DEFINITIONS AND EXCLUSIONS

### 1. TERRITORY

This Policy applies only while the automobile is being used or operated as a transportation network automobile and is operated, used, stored or parked within Canada, the United States of America or upon a vessel plying between ports of those countries.

2. **OCCUPANT DEFINED**

In this Policy the word “occupant” means a person driving, being carried in or upon or entering or getting on to or alighting from an automobile.

3. **CONSENT OF OWNER**

No person shall be entitled to indemnity or payment under this Policy who is an occupant of any automobile which is being used without the consent of the owner thereof.

4. **GARAGE PERSONNEL EXCLUDED**

No person who is engaged in the business of selling, repairing, maintaining, storing, servicing or parking automobiles shall be entitled to indemnity or payment under this Policy for any loss, damage, injury or death sustained while engaged in the use or operation of or while working upon the automobile in the course of that business or while so engaged is an occupant of the described automobile or a newly acquired automobile as defined in this Policy.

5. **AUTOMOBILE DEFINED**

In this Policy except where stated to the contrary the words “the automobile” mean:

**Under sections A (Third Party Liability), B (Accident Benefits), C (Loss of or Damage to Insured Automobile)**

(a) The Described Automobile – an automobile, specifically described in the Policy or within the description of insured automobiles set forth therein;

(b) A Newly Acquired Automobile – an automobile, ownership of which is acquired by the insured and, within fourteen days following the date of its delivery to him, notified to the Insurer in respect of which the insured has no other valid insurance, if either it replaces an automobile described in the application or the Insurer insures (in respect of the section or subsection of the Insuring Agreements under which claim is made) all automobiles owned by the Insured at such delivery date and in respect of which the Insured pays any additional premium required; provided however, that insurance hereunder shall not apply if the Insured is engaged in the business of selling automobiles;

**and under sections A (Third Party Liability) and B (Accident Benefits) only**

(c) A Temporary Substitute Automobile – an automobile not owned by the Insured, nor by any person or persons residing in the same dwelling premises as the Insured, while temporarily used as the substitute for the described automobile which is not in use by any person insured by this Policy, because of its breakdown, repair, servicing, loss, destruction or sale;

6. **TWO OR MORE AUTOMOBILES**

(a) When two or more automobiles are described hereunder with respect to the use or operation of such described automobiles, each automobile shall be deemed to be insured under a separate policy;

(b) A motor vehicle and one or more trailers or semi-trailers attached thereto shall be held to be one automobile with respect to the limit(s) of liability under insuring Agreements A and B and separate automobiles with respect to the limit(s) of liability, including deductible provisions, under Insuring Agreement C.

7. **WAR RISKS EXCLUDED**

The Insurer shall not be liable under section B or C of this Policy for any loss, damage, injury or death caused directly or indirectly by bombardment, invasion, civil war, insurrection, rebellion, revolution, military or usurped power, or by operation of armed forces while engaged in hostilities, whether war be declared or not.

**8. EXCLUDED USES**

Unless coverage is expressly given by an endorsement of this Policy, the insurer shall not be liable under this Policy while:

(a) the automobile is rented or leased to another person;

(b) the automobile is used to carry explosives, or to carry radioactive material for research, education, development or industrial purposes, or for purposes incidental to those purposes. “Radioactive material” means

(a) spent nuclear fuel rods that have been exposed to radiation in a nuclear reactor,

(b) radioactive waste material,

(c) unused enriched nuclear fuel rods, or

(d) any other radioactive material of such quantity and quality as to be harmful to persons or property if its container were destroyed or damaged;

(c) the automobile is used as a taxicab, public omnibus, livery, jitney or sightseeing conveyance.

## 9. LIMITATION OF ACTIONS

Every action or proceeding against the insurer for the recovery of insurance money payable under this contract is absolutely barred unless commenced within the time set out in the *Insurance Act*.

## 10. DEFINITIONS

In this Policy:

(a) "transportation network" means any online enabled application, digital platform, software, website, or any other system offered, used or operated by a transportation network company and that is used by persons to prearrange the transportation of passenger(s) for compensation in a transportation network automobile.

(b) "transportation network automobile" means an automobile used to provide prearranged transportation of passenger(s) for compensation through the use of a transportation network.

(c) "transportation network company" means a corporation, partnership, sole proprietorship, association or other entity or individual that connects passenger(s) with transportation network drivers for prearranged transportation exclusively through the offering, use or operation of a transportation network.

(d) "transportation network driver" means a person authorized by a transportation network company to use a transportation network automobile to provide prearranged transportation of passenger(s) for compensation through the use of a transportation network.

(e) "transportation network automobile owner" means the owner of a transportation network automobile, or if the transportation network automobile is leased, the lessee and lessor of the transportation network automobile.

## 11. Additional Insureds

The insurer agrees to indemnify as an insured person every transportation network driver and every transportation network automobile owner; however, transportation network drivers and transportation network owners shall not have the right to cancel, renew or otherwise amend this contract.

## STATUTORY CONDITIONS

In these Statutory Conditions, unless the context otherwise requires, “insured” means a person insured by the contract whether named in the contract or not.

(i) Statutory Condition 3 does not apply when the contract does not insure against liability for loss or damage to persons and property;

(ii) Statutory Condition 4 does not apply when the contract does not insure against loss of or damage to the automobile. Statutory Conditions 2, 3, 4, 5, 6 and 7 shall not apply to Section B- Accident Benefits.

### Material Change in Risk

1. (1) The insured named in this contract must promptly notify the insurer or its agent in writing, of any change in the risk material to the contract and within the insured’s knowledge.

   (2) Without restricting the generality of subparagraph (1) of this condition, “change in the risk material to the contract” includes

      (a) any change in the insurable interest of the insured named in the contract in the automobile by sale, assignment or otherwise, except through change of title by succession, death or proceedings under the Bankruptcy and Insolvency Act (Canada); and

      (b) in respect to insurance against loss of or damage to the automobile,

         (i) any mortgage, lien or encumbrance affecting the automobile after the application for the contract, and

         (ii) any other insurance of the same interest, whether valid or not, covering loss or damage insured by the contract or any portion of the contract.

### Prohibited Use by Insured

2. (1) The insured must not drive or operate the automobile

(a) unless the insured is for the time being either authorized by law or qualified to drive or operate the automobile,

(b) while the insured's licence to drive or operate an automobile is suspended or while the insured's right to obtain a licence is suspended or while the insured is prohibited under order of any court from driving or operating an automobile,

(c) while the insured is under the age of 16 years or under any other age prescribed by the law of the province in which the insured resides at the time the contract is made as being the minimum age at which a licence or permit to drive an automobile may be issued to the insured,

(d) for any illicit or prohibited trade or transportation, or

(e) in any race or speed test.

**Prohibited Use by Others**

(2) The insured must not permit or allow the use of the automobile

(a) by any person

(i) unless that person is for the time being either authorized by law or qualified to drive or operate the automobile, or

(ii) while that person is under the age of 16 years or under any other age prescribed by the law of the province in which the person resides at the time the contract is made as being the minimum age at which a licence or permit to drive an automobile may be issued to the person,

(b) by any person who is a member of the household of the insured while the person's licence to drive or operate an automobile is suspended or while the person's right to obtain a licence is suspended or while the person is prohibited under order of any court from driving or operating an automobile,

(c) for any illicit or prohibited trade or transportation, or

(d) in any race or speed test.

**Requirements Where Loss or Damage to Persons or Property**

3. (1) The insured must

(a) promptly give to the insurer written notice, with all available particulars, of any accident involving loss or damage to persons or property and of any claim made on account of the accident,

(b) verify by statutory declaration, if required by the insurer, that the claim arose out of the use or operation of the automobile as a transportation network automobile, and that the person operating or responsible for the operation of the automobile at the time of the accident is a person insured under the contract,

(c) forward immediately to the insurer every letter, document, advice or writ received by the insured from or on behalf of the claimant, and

(d) in addition to the requirement of (a), promptly give to the insurer the precise times that a transportation network driver logged onto a transportation network for the purposes of accepting requests for transportation services for compensation from prospective passengers(s) and logged out of a transportation network.

(2) The insured must not

(a) voluntarily assume any liability or settle any claim except at the insured's own cost, or

(b) interfere in any negotiations for settlement or in any legal proceeding.

(3) The insured must, whenever requested by the insurer, aid in securing information and evidence and the attendance of any witness, and must co-operate with the insurer, except in a pecuniary way, in the defence of any action or proceeding or in the prosecution of any appeal.

**Requirements Where Loss or Damage to the Automobile**

4. (1) When loss of or damage to the automobile occurs, the insured must, if the loss or damage is covered by the contract,

(a) promptly give notice of the loss or damage in writing to the insurer with fullest information obtainable at the time,

(b) at the expense of the insurer, and as far as reasonably possible, protect the automobile from further loss or damage, and

(c) deliver to the insurer within 90 days after the date of the loss or damage a statutory declaration stating, to the best of the insured's knowledge and belief, the place, time, cause and amount of the loss or damage, the interest of the insured and of all others in the automobile, the encumbrances on the automobile, all other insurance, whether valid or not, covering the automobile and that the loss or damage did not occur through any wilful act or neglect, procurement, means or connivance of the insured.

(2) Any further loss or damage accruing to the automobile directly or indirectly from a failure to protect it as required under subparagraph (1) of this condition is not recoverable under the contract.

(3) No repairs, other than those that are immediately necessary for the protection of the automobile from further loss or damage, may be undertaken and no physical evidence of the loss or damage may be removed

(a) without the written consent of the insurer, or

(b) until the insurer has had a reasonable opportunity to make the inspection for which provision is made in Statutory Condition 5.

**Examination of Insured**

(4) The insured must submit to examination under oath and must produce for examination at any reasonable place and time designated by the insurer or its representative all documents in the insured's possession or control that relate to the matters in question, and the insured must permit extracts and copies of the documents to be made.

**Insurer Liable for Cash Value of Automobile**

(5) The insurer is not liable for more than the actual cash value of the automobile at the time any loss or damage occurs, and the loss or damage must be ascertained or estimated according to that actual cash value with proper deductions for depreciation, however caused, and must not exceed the amount that it would cost to repair or replace the automobile, or any part of the automobile, with material of similar kind and quality, but if any part of the automobile is obsolete and unavailable, the liability of the insurer in respect of

the automobile is limited to the value of that part at the time of loss or damage, not exceeding the maker's latest list price.

**Repair or Replacement**

(6) Except where a dispute resolution process has been initiated, the insurer, instead of making payment, may, within a reasonable time, repair, rebuild or replace the property damaged or lost with other of similar kind and quality if, within 7 days after the receipt of the proof of loss, it gives written notice of its intention to do so.

**No Abandonment, Salvage**

(7) There must be no abandonment of the automobile to the insurer without the insurer's consent.

(8) If the insurer exercises the option to replace the automobile or pays the actual cash value of the automobile, the salvage, if any, vests in the insurer.

**In Case of Disagreement**

(9) In the event of disagreement as to the nature and extent of the repairs and replacements required, or as to their adequacy, if effected, or as to the amount of the loss or damage, those questions must be determined by a dispute resolution process as provided under the *Insurance Act* before there can be recovery under the contract, whether the right to recover under the contract is disputed or not, and independently of all other questions.

(10) There is no right to a dispute resolution process until

(a) a specific demand for it is made in writing, and

(b) the proof of loss has been delivered.

**Inspection of Automobile**

5. The insured must permit the insurer at all reasonable times to inspect the automobile and its equipment.

**Time and Manner of Payment of Insurance Money**

6. (1) The insurer must pay the insurance money for which it is liable under the

contract within 60 days after the proof of loss has been received by it or, where a dispute resolution process is conducted under Statutory Condition 4(9), within 15 days after the decision is rendered.

**When Action May Be Brought**

(2) The insured may not bring an action to recover the amount of a claim under the contract unless the requirements of Statutory Conditions 3 and 4 are complied with or until the amount of the loss has been ascertained as provided for under Statutory Conditions 3 and 4 or by a judgment against the insured after trial of the issue, or by agreement between the parties with the written consent of the insurer.

**Who May Give Notice and Proofs of Claim**

7. Notice of claim may be given and proofs of claim may be made by the agent of the insured named in this contract in the case of absence or inability of the insured to give the notice or make the proof, such absence or inability being satisfactorily accounted for or, in the like case or if the insured refuses to do so, by a person to whom any part of the insurance money is payable.

**Termination**

8. (1) The contract may be terminated

(a) by the insurer giving to the insured 15 days' notice of termination by registered mail or 5 days' written notice of termination personally delivered, or

(b) by the insured at any time on request.

(2) If the contract is terminated by the insurer,

(a) the insurer must refund the excess of premium actually paid by the insured over the prorated premium for the expired time, but in no event, may the prorated premium for the expired time be less than any minimum retained premium specified, and

(b) the refund must accompany the notice unless the premium is subject to adjustment or determination as to the amount, in which case the refund must be made as soon as practicable.

(3) If the contract is terminated by the insured, the insurer must refund as soon as practicable the excess of premium actually paid by the insured over the

short rate premium for the expired time, but in no event may the short rate premium for the expired time be deemed to be less than any minimum retained premium specified.

(4) The 15-day referred to in subparagraph 1(a) of this condition starts to run on the day the registered letter or notification of it is delivered to the insured's postal address.

**Notice**

9. (1) Any written notice to the insurer may be delivered at, or sent by registered mail to, the chief agency or head office of the insurer in the province.

(2) Written notice may be given to the insured named in the contract by letter personally delivered to the insured or by registered mail addressed to the insured at the insured's latest postal address as notified to the insurer.

(3) In this condition, "registered" means registered in or outside Canada.

# ALBERTA APPLICATION FOR AUTOMOBILE INSURANCE

## TRANSPORTATION NETWORK S.A.F.9

POLICY NO. ASSIGNED:

INSURANCE COMPANY (HEREINAFTER CALLED THE INSURER) ☐ NEW REPLACING POLICY NO. ▶

POLICY LANGUAGE: ☐ ENGLISH ☐ FRENCH

**1.** APPLICANT'S FULL NAME AND POSTAL ADDRESS (INCLUDING COUNTY OR DISTRICT)

| | |
|---|---|
| | BROKER'S CLIENT ID / COMPANY CLIENT ID |
| | BROKER |
| | BRANCH / CODE(S) |
| POSTAL CODE | POLICY BILLING |

| CONTACT NUMBER | CONTACT NUMBER | |
|---|---|---|
| ☐ BUSINESS<br>☐ HOME<br>☐ FAX | ☐ BUSINESS<br>☐ HOME<br>☐ FAX | ☐ BROKER BILL<br>☐ COMPANY BILL<br>☐ PAYMENT PLAN |

**2.** POLICY PERIOD

| | TIME | | DATE | | DATE |
|---|---|---|---|---|---|
| FROM | : | A.M. ☐ P.M. ☐ | | TO 12:01 A.M. | |

ALL TIMES ARE LOCAL TIMES AT ALBERTA, CANADA.

**3.** PARTICULARS OF THE DESCRIBED AUTOMOBILE(S) (EACH DESCRIBED AUTOMOBILE IS AND WILL BE CHIEFLY USED IN THE PROVINCE OF ALBERTA, CANADA)

**4.** THIS APPLICATION IS MADE FOR INSURANCE AGAINST ONE OR MORE OF THE PERILS MENTIONED IN THIS ITEM, BUTONLY FOR INSURANCE UNDER THE SECTION(S) FOR WHICH A PREMIUM IS SPECIFIED IN THIS ITEM AND NO OTHER AND UPON THE TERMS, CONDITIONS, DEFINITIONS AND EXCLUSIONS OF THE INSURER'S CORRESPONDING STANDARD POLICY FORM AND FOR THE SPECIFIED LIMIT(S) AND AMOUNT(S).

| INSURING AGREEMENTS | SECTION A THIRD PARTY LIABILITY | SECTION B ACCIDENT BENEFITS | SECTION C LOSS OF OR DAMAGE TO INSURED AUTOMOBILE(S) | | | | ENDORSEMENTS | |
|---|---|---|---|---|---|---|---|---|
| | | | THIS POLICY CONTAINS A PARTIAL PAYMENT OF LOSS CLAUSE | | | | S.E.F. NO. | |
| PERILS | LEGAL LIABILITY FOR BODILY INJURY TO OR DEATH OF ANY PERSON OR DAMAGE TO PROPERTY (EXCLUSIVE OF COSTS AND POST JUDGEMENT INTEREST) FOR LOSS OR DAMAGE RESULTINGFROM BODILY INJURY TO OR THE DEATH OF ONE OR MORE PERSONS, AND FOR LOSS OR DAMAGE TO PROPERTY REGARDLESS OF THE NUMBER OF CLAIMS ARISING FROM ANY ONE ACCIDENT. | PAYMENTS FOR DEATH OR BODILY INJURY | 1. ALL PERILS | 2. COLLISION OR UPSET | 3. COMPREHENSIVE (EXCLUDING COLLISION OR UPSET) | 4. SPECIFIED PERILS (EXCLUDING COLLISION OR UPSET) | | |
| | | | AMOUNT DEDUCTIBLE ON EACH SEPARATE CLAIM EXCEPT FOR LOSS OR DAMAGE BY FIRE OR LIGHTNING OR THEFT OF THE ENTIRE AUTOMOBILE | | | | | |
| LIMITS AND AMOUNTS IN DOLLARS | | AS STATED IN SECTION B OF THE POLICY | | | | | S.E.F. PREMIUM | PREMIUM |
| PREMIUM IN DOLLARS | | | | | | | | |

MINIMUM RETAINED PREMIUM ▶ $

TOTAL ESTIMATED POLICY PREMIUM ▶ $

THE TOTAL ESTIMATED POLICY PREMIUM IS SUBJECT TO ADJUSTMENT TO THE INSURER'S MANUAL PREMIUM FOR THE RISK

**5 (A).** HAS ANY INSURER, TO THE KNOWLEDGE OF THE APPLICANT, CANCELLED, DECLINED OR REFUSED TO RENEW OR ISSUE AUTOMOBILE INSURANCE TO THE APPLICANT WITHIN THE THREE YEARS PRECEDING THIS APPLICATION? IF SO, STATE NAME OF INSURER, AND POLICY NUMBER IF AVAILABLE.

INSURER _____ POLICY NO. _____

**5 (B).** DETAILS OF APPLICANT'S MOST RECENT AUTOMOBILE INSURANCE

INSURER _____

POLICY NO. _____ EXPIRY DATE _____

| VEH. NO. | 6 (A). WILL THE AUTOMOBILE BE RENTED OR LEASED, OR USED FOR CARRYING EXPLOSIVES OR RADIOACTIVE MATERIAL? IF SO, PROVIDE DETAILS | 6 (B). WILL THE AUTOMOBILE BE USED FOR THE TRANSPORTATION OF GOODS FOR COMPENSATION? IF SO, STATE CLASS OF LICENCE OR CERTIFICATE AND RADIUS OF OPERATIONS (Note: the SPF9 does not provide coverage for the transportation of goods for compensation) |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |

7 Where (a) an Applicant for a contract,(i) gives false particulars of the described automobile to be insured to the prejudice of the Insurer, or (ii) knowingly misrepresents or fails to disclose in the application any fact required to be stated therein; or (b) the Insured contravenes a term of the contract or commits a fraud; or (c) the Insured willfully makes a false statement in respect of a claim under the contract, a claim by the Insured is invalid and the right of the Insured to recover indemnity is forfeited.

The applicant acknowledges that all of the information given by the applicant in items 1 through 6 is true and the applicant hereby applies for a contract of automobile insurance to be based on the truth of the said information. The personal information collected on this application is needed to issue the policy. We are required to provide this information to the Underwriting Information Tracking System, which is a data bank operated on behalf of the automobile insurance industry for the purpose of statistical analysis, identification of eligible risks and the proper rating of those risks. The information in the data bank is available to all insurance companies and insurance agents providing automobile insurance in Canada.

CONSENT: I am applying for automobile insurance based on the information provided in this application. I authorize you to collect, use and disclose the information on this form and any additional information about the driving record, automobile insurance policy and claims history of the drivers of the Described Automobile's from whom I declare I have obtained consent for these purposes. I understand that this personal information is necessary to assess the risk, issue the insurance contract, renewal or change, detect and prevent fraud and investigate and settle any claims. If I apply for a premium payment plan, I authorize you to obtain and use my credit report.

DATE SIGNATURE OF APPLICANT X

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Due to file restrictions, please use the following link to access the files:

A.M. Best Company, Inc., *A.M. Best Methodology*, "**Catastrophe Analysis in A.M. Best Ratings**," October 13, 2017.

**Casualty Actuarial Society**
4350 North Fairfax Drive, Suite 250
Arlington, VA 22203

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703.276.3108 fax

www.casact.org

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Due to file restrictions, please use the following link to access the files:

A.M. Best Company, Inc., A.M. Best Methodology, "**Understanding BCAR For Canadian Property/Casualty Insurers**," August 12, 2021, pp. 1-9 (up to Section C), 21-29 (B5 Reserve Risk and B6 Premiums Risk), 30-31 (B8 Catastrophe Risk) only.

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AMERICAN ACADEMY of ACTUARIES

**NAIC PUBLIC HEARING ON CREDIT-BASED INSURANCE SCORES**

**APRIL 30, 2009**

My name is Jeff Kucera. I am here today representing the Casualty Practice Council of the American Academy of Actuaries.[1] I am employed as a senior consultant with EMB America LLC, an actuarial consulting firm. I am a fellow of the Casualty Actuarial Society and a member of the American Academy of Actuaries. I will be addressing actuarial practice applicable to risk classification and specifically, the use of credit-based insurance scores for rating and underwriting purposes. I am also here to offer the assistance of the Casualty Practice Council in your continued exploration of credit-based insurance scores.

In particular, my comments will demonstrate that the use of credit-based insurance scores allows the insurer to better segment insurance risks for the purpose of charging appropriate rates. I will address the following items:

- Current economic circumstances;
- Definition of what constitutes a credit-based insurance score;
- Evaluation of how insurers use credit-based insurance scores; and
- Discussion of how current economic conditions have affected policyholder premiums related to credit-based insurance scores.

Most companies now use credit-based insurance scores in the rating of personal lines such as private-passenger automobile or homeowners' insurance. The use of credit-based insurance scores helps insurance companies charge those risks that are likely to generate greater costs higher premiums, while those likely to generate lower costs get lower premiums. The removal of such insurance scores will not lower overall insurance premium; rather, it will redistribute the premium charges so that those risks with lower expected costs will pay more than is actuarially fair, while those with greater expected costs will pay less than is actuarially fair.

[1] The American Academy of Actuaries is a 16,000-member professional association whose mission is to serve the public on behalf of the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

## Current Economic Circumstances

As we are all aware, the United States is suffering from a major economic crisis, which has imposed considerable hardship on both individuals and businesses. A significant aspect of the current economic crisis is the severe tightening of the credit markets. This may suggest that credit standards are being tightened by banks and other sources of commercial credit. This comes at a time when increasing numbers of Americans are experiencing loss of income, including decreases in the value of many of their assets and unemployment. These problems are significant and ongoing, and they raise questions regarding the use of credit rating in insurance. These issues span multiple lines of insurance, but for individuals, they have the greatest impact on private-passenger auto and homeowners' insurance.

The American Academy of Actuaries is the public policy organization for actuaries practicing in all specialties within the United States. A major purpose of the Academy is to act as the voice of the profession on public policy issues. The Academy regularly prepares testimony for Congress, provides information to federal elected officials, comments on proposed federal regulations, and works closely with state officials on issues related to insurance.

The purpose of my presentation on behalf of the Casualty Practice Council today is to assist the NAIC in its analysis of these questions and to offer to work with the NAIC in its continuing study of these issues. The Casualty Practice Council has a history of working with the NAIC on this and many other topics. In fact, the Risk Classification Subcommittee of the Academy's Products, Pricing, and Market Committee presented the NAIC with a report, "The Use of Credit History for Personal Lines of Insurance,"[2] in November 2002, which is still relevant today.

The NAIC has identified three issues to serve as a basis for discussion. Our comments will provide an actuarial context for each of these issues.

## Definition of What Constitutes a Credit-Based Insurance Score

An insurance score is a numerical score or ranking assigned to an insurance risk (i.e., a prospective insured) based on that risk's underlying characteristics. A common purpose of insurance scoring is to generate useful information in underwriting and pricing insurance for the individual risk being scored. The score provides a relative measure of the expected cost to the insurance company associated with the risk.

A credit-based insurance score utilizes various attributes found in a typical individual's credit report. There are several different scoring models currently in use to calculate credit-based insurance scores, including models developed by third-party vendors and proprietary models built by individual insurance companies. The type of credit attributes generally having the

[2] http://www.actuary.org/pdf/casualty/credit_dec02.pdf (last visited on Apr. 24, 2009).

greatest effect on an individual's insurance score include: number of inquiries into opening new accounts, accounts 30 days or more past due. While the attributes and relative values are not identical for all companies, generally the higher the credit-based insurance score, the better an individual's credit rating.

The importance of credit-based insurance scores is that there is a strong correlation between them and the expected costs associated with the risk. In other words, in a group of insureds who are identical in every other way, insureds with favorable insurance scores are significantly more likely to have better loss experience than insureds with unfavorable insurance scores. Consequently, credit-based insurance scores are a statistically reliable tool for segmenting risks into different groups with different expected cost levels. This has been demonstrated in a number of studies and reports, some of which we have listed in Appendix A.

## Evaluation of How Insurers Use Credit-Based Insurance Scores

Most state insurance laws prohibit the use of insurance rates that are excessive, inadequate, or unfairly discriminatory. Principle 4 of the Casualty Actuarial Society's *Statement of Principles Regarding Property and Casualty Insurance Ratemaking* states that, "A rate is reasonable and not excessive, inadequate, or unfairly discriminatory if it is an actuarially sound estimate of the expected value of all future costs associated with an individual risk transfer."[3] Thus, the overall average rate level should be set so that the total premium collected from all risks is sufficient to cover the total expected costs. Additionally, the individuals' rates should be set such that the premium collected from each individual risk, or group of similar risks, reflects the expected costs for that individual risk (or group of similar risks).

In a 2001 survey, 90 percent of the responding insurers (from the top 100 personal lines companies) indicated that they were using credit data.[4] According to the survey, the use of credit data is a relatively recent trend; more than half of the responding insurers using credit said that they began using credit in 1998 or later. Today, the number of companies using credit is likely even greater. Some insurers use insurance scores simply to determine whether a prospective insured qualifies to be written by the company. More typically, insurers also use insurance scores to help segment risks into different groups with similar expected costs for the purpose of rating. In such cases, the insurer may use the insurance score directly as a rating factor, also called a "risk classification factor," similar to an amount of insurance for homeowners' insurance or prior violations for private-passenger auto insurance. Alternatively, an insurer with multiple "tiers" representing different levels of expected cost may use the insurance score to help assign risks to the appropriate tier. Whether insurance scores are being used as a risk classification or

[3] http://www.casact.org/standards/princip/sppcrate.pdf (last visited on Apr. 22, 2009), *Statement of Principles Regarding Property and Casualty Insurance Ratemaking*, Casualty Actuarial Society, May 1988.
[4] "Insurance Scoring in Personal Automobile Insurance—Breaking the Silence," Conning & Company, 2001.

tiering factor, the impact is the same: insurance scores are being used to segment risks into homogenous groups so that appropriate premiums can be charged.

With respect to insurance scores as a risk classification or tiering factor, the actuary is guided by Actuarial Standard of Practice (ASOP) No. 12, *Risk Classification*.[5] Rating plans for individual lines of insurance generally include several different risk classifications. For example, private-passenger auto lines use such risk classifications as the make and model of the car, age of the driver, prior traffic violations and accidents, etc. For homeowners' insurance, examples of risk classification include amount of insurance, type of home construction, prior loss history, etc. The key section of ASOP No. 12 that is applicable to the use of insurance scores is section 3.2.1., which reads in part as follows:

> Relationship of Risk Characteristics and Expected Outcomes—The actuary should select risk characteristics that are related to expected outcomes. A relationship between a risk characteristic and an expected outcome, such as cost, is demonstrated if it can be shown that the variation in actual or reasonably anticipated experience correlates to the risk characteristic. In demonstrating a relationship, the actuary may use relevant information from any reliable source, including statistical or other mathematical analysis of available data. The actuary may also use clinical experience and expert opinion.
>
> Rates within a risk classification system would be considered equitable if differences in rates reflect material differences in expected cost for risk characteristics. In the context of rates, the word *fair* is often used in place of the word *equitable*.
>
> The actuary should consider the interdependence of risk characteristics. To the extent the actuary expects the interdependence to have a material impact on the operation of the risk classification system, the actuary should make appropriate adjustments.

The summary of articles on credit in Appendix A includes several studies that have shown that credit scores reflect significant differences in expected loss costs. Thus, credit scores are appropriate tools for risk differentiation. Rates based on groups differentiated by insurance score are not excessive, inadequate, or unfairly discriminatory.

The removal of such insurance scores will not lower overall premium collected; it will only redistribute the premium collected such that risks with lower expected costs will pay more, and those with greater expected costs will pay less.

While the evidence may only be anecdotal, most companies report that the use of insurance scores, along with multivariate rating and other new rating factors, have allowed them to write more risks from the general population than before these features were introduced.

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[5] http://www.actuarialstandardsboard.org/pdf/asops/asop012_101.pdf (last visited on Apr. 22, 2009), Actuarial Standard of Practice No. 12, *Risk Classification (for All Practice Areas)*, adopted by the Actuarial Standards Board, Dec. 2005.

If the NAIC determines that further studies may be appropriate, the Casualty Practice Council would be pleased to assist the NAIC in such studies.

**Discussion of How Current Economic Conditions Have Affected Policyholder Premiums Related to Credit-Based Insurance Scores**

While our current economic condition is certainly on everyone's mind, it is still uncertain exactly how this will affect overall insurance costs and, therefore, overall insurance prices. Some regulators or other public officials may be concerned that if the current economic crisis causes insurance scores to worsen, it will lead to unwarranted premium increases. It is important to consider both the impact on the aggregate premium and on individuals' premium.

First, it is important to consider the impact on the aggregate premium. Insurers use insurance scores to determine appropriate rate relationships between risk classes, not to determine overall premium need. Assume for a moment that insurers continue to maintain the same rate relationships for different insurance score ranges, and that the current economic crisis causes every insureds' insurance score to worsen. The actuary would observe this distributional shift or change and adjust overall rate levels so that the total premium collected by the insurance company remains the same and the integrity of the rate relationships among risks remains intact.

This is no different than any other distributional shift, such as an increase in the average value of homes, which an actuary has to consider when setting the overall rate level. Part of a typical actuarial rate review is an analysis of any shifts in distributions that affect the premium level. The actuary would adjust for these shifts in determining appropriate future rates. As a result of this standard ratemaking practice, any shift in insurance scores due to the current adverse economic conditions will not result in any long-term impact on overall premium collected.

Second, it is important to consider the impact on the individuals' premium.[6] As stated earlier, studies have demonstrated that insurance scores are an effective means of segmenting risks. Because of this, many companies now vary the rates charged to risks with different insurance scores. Some regulators or other public officials may be concerned that a dramatic shift in credit scores could disrupt the current relative rates among risks with insurance scores; in other words, perhaps the difference in expected cost levels among insureds with favorable and unfavorable scores will be less significant.

This, too, is not a problem that is unique to insurance scores. The gender and age of drivers have long been recognized as important rating characteristics for personal automobile insurance. There have been, and still are, very significant differences between the rates charged to young

[6] It is important to remember that any distribution shift is likely to have a smaller effect on renewal business than on new business, because some states and/or companies only permit the use of such scores for renewals if it results in a more favorable rate for the individual insured.

males and young females, reflecting the higher cost of auto insurance for young male drivers compared to young female drivers. However, over time, the driving habits of young males and young females have become more similar, and while the difference in risk is still significant, it is not nearly as large as it was in the past. As this trend has developed, insurers adjusted classification plans to reduce the rate differentials to reflect it. If the actuary regularly analyzes the indicated rate differentials for different insurance score ranges, the rate differentials will be changed if more recent data suggests it. This potential shift in group differentials, and motivation or intent to be competitive, provide incentives for companies to regularly review their rate differences.

One of the other roles of an actuary is to regularly review the data to decide whether the overall average rate level is appropriate and whether the rate differentials for risks with different insurance scores need to be adjusted. By doing this, the actuary can ensure that the rates are actuarially sound,[7] regardless of the effect the current economic crisis has on personal insurance scores.

It is possible that a sudden or immediate distribution shift could result from the current economic conditions, and that, by the time it works its way into the actuary's data, many insureds will have already been harmed. While we have been suffering through the current economic conditions for approximately six months, we are unaware of any quantifiable evidence that has surfaced to demonstrate that such a dramatic shift has been occurring. It is our opinion, based on anecdotal evidence, that any shift thus far has been minor. This could be because renewal business, which makes up the majority of any company's business, is less likely to be affected by a shift. Ascertaining whether an actual shift of any significance has occurred would require a study to look at the distribution of insurance scores of several companies over a period of time. The Casualty Practice Council is willing to assist the NAIC should it decide to pursue such a study.

On behalf of the Academy and the Casualty Practice Council, I thank you for the opportunity to speak to you today. To the extent that we can further assist the NAIC in its endeavors on this topic, the Casualty Practice Council volunteers its services. We look forward to working with you.

If time permits, I am happy to answer any questions you may have.

[7] http://www.casact.org/standards/princip/sppcrate.pdf (last visited on Apr. 22, 2009), *Statement of Principles Regarding Property and Casualty Insurance Ratemaking*, Casualty Actuarial Society, May 1988.

Appendix A – Summary of Additional Articles on Credit Scoring

Several studies have already been conducted on the use of credit for rating and underwriting for both homeowners' and private-passenger auto insurance. In particular, the following studies may warrant review:

- *Predictiveness of Credit History for Insurance Loss Ratio Relativities* by Isaac Fair, (1999).
- *Use of Credit Reports in Underwriting* by the Commonwealth of Virginia, State Corporation Committee, Bureau of Insurance (1999).
- *The Impact of Personal Insurance Credit History on Loss Performance in Personal Lines* by James D. Monaghan (2000).
- *Insurance Scoring in Personal Automobile Insurance – Breaking the Silence* by Conning & Company (2001).
- *Use of Credit Information by Insurers in Texas* by the Texas Department of Insurance (December 2004).
- *Use of Credit Information by Insurers in Texas – the Multivariate Analysis* by the Texas Department of Insurance (January 2005).
- *Credit-Based Insurance Scores: Impact on Consumers of Automobile Insurance* by the Federal Trade Commission (July 2007).
- *Report to the Congress on Credit Scoring* by the Board of Governors of the Federal Reserve System (2007).

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The Exam 6-Canada syllabus includes the CCIR Final 2023 IFRS 17 P&C Insurance Return. Please note that "the reproduction is a copy of an official work that is published by the Government of Canada and that the reproduction has not been produced in affiliation with, or with the endorsement of the Government of Canada." To emphasize that these are copies of an official work, a "SAMPLE" watermark has been added to these archived documents.

**Instructions and Forms**

- Section I – Introduction
- Section II - Filing Requirements
- Section III – Definitions
- Section IV - Detailed Instructions
- Section V - Jurisdictional Requirements

**Core Financial Statement Return (PC1), 2023** (XLSX, 126 KB)

**Supervisory Quarterly Return (PC2), 2023** (XLSX, 271 KB)

**Supervisory Annual Return (PC3), 2023** (XLSX, 227 KB)

**Validation Rules, 2023 – P&C Validation Rules** (XLSX, 280 KB)

# Standards of Practice

## Actuarial Standards Board

**January 2023**

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# 1000—General

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# 1100 Introduction

## 1110 Application

.01 These Standards of Practice apply to actuarial work in Canada. Responsibility for these Standards of Practice vests in the Actuarial Standards Board (Canada) and approval of standards and changes to standards are made through a process that includes consultation with the actuarial profession and other interested parties. They are intended for the benefit of the public. The work in Canada of a member of a professional actuarial organization is expected to conform to these Standards of Practice.

.02 The existence of standards is not a substitute for professional judgment or consideration for the needs of the user(s) when performing specific work.

.03 The authority of these Standards of Practice derives from the powers of those bodies that recognize them for actuarial work in Canada. Among others, these include professional actuarial bodies and relevant laws such as those regulating pensions and insurance. Compliance with these Standards of Practice is also likely to be taken into account when the quality of actuarial work is being considered in a court of law or in other contested situations. However, in such circumstances, deviation from any provision of these Standards of Practice should not, in and of itself, be presumed to be malpractice.

## 1120 Definitions

.01 Each term set over dotted underlining has the meaning given in this subsection. A term that is not set over dotted underlining has its ordinary meaning.

.02 Accepted actuarial practice is the manner of performing work in accordance with these Standards of Practice. Unless the context requires otherwise, it refers to work in Canada. [*pratique actuarielle reconnue*]

.03 Actuarial cost method is a method to allocate the present value of a benefit plan's obligations to time periods, usually in the form of a service cost and an accrued liability. [*méthode d'évaluation actuarielle*]

.04 Actuarial evidence work is work where the actuary provides an expert opinion with respect to any area of actuarial practice in the context of an actual or anticipated dispute resolution proceeding, where such expert opinion is expected or required to be independent. A dispute resolution proceeding may be a court or court-related process, a tribunal, a mediation, an arbitration, or a similar proceeding. Actuarial evidence work may include the determination of capitalized values in respect of an individual, or the provision of an expert opinion with respect to a dispute involving an actuarial practice area, such as pensions or insurance, or questions of professional negligence. [*travail d'expertise devant les tribunaux*]

.05 Actuarial present value method is a method to calculate the lump sum equivalent at a specified date of amounts payable or receivable at other dates as the aggregate of the present values of each of those amounts at the specified date, and taking into account both the time value of money and, where appropriate, contingent events. [*méthode de la valeur présente actuarielle*]

.06 Actuary, as it is used in these standards, means a member of a professional actuarial organization whose work in Canada is expected to conform to these standards. [*actuaire*]

.07 Anti-selection is the tendency of one party in a relationship to exercise options to the detriment of another party when it is to the first party's advantage to do so. [*antisélection*]

.08 Appointed actuary of an entity is an actuary formally appointed, pursuant to legislation, by the entity to monitor the financial condition of that entity. [*actuaire désigné*]

.09 Appropriate engagement is one that does not impair the actuary's ability to conform to the precepts of ethical and professional conduct such as those that may be found in the Rules of Professional Conduct of the Canadian Institute of Actuaries or relevant law or regulation. Unless the context otherwise requires, wherever the word "engagement" is used in these standards it refers to an appropriate engagement. [*mandat approprié*]

.10 Automatic balancing mechanisms automatically adjust contributions, benefits, and/or parameters of a plan in order to restore the balance between its source of financing and its benefits. The mechanism is prescribed by a set of predetermined measures to be taken, either immediately or later as prescribed, upon being triggered by certain demographic, economic, or financial indicators. [*mécanismes automatiques de compensation*]

.11 Benefits liabilities are the liabilities of a plan in respect of claims incurred on or before a calculation date. [*obligations liées aux prestations*]

.12 Best estimate means without bias. [*meilleure estimation*]

.13 Calculation date is the effective date of a calculation; e.g., the calculation date in the case of a valuation for financial statements. It usually differs from the report date. [*date de calcul*]

.14 Case estimate at a calculation date is the unpaid amount of one of, or a group of, an insurer's reported claims (perhaps including the amount of claim adjustment expenses), as estimated by a claims professional according to the information available at that date. [*évaluation du dossier*]

.15 Claim adjustment expenses are internal and external expenses in connection with settlement and administration of claims. [*frais de règlement des sinistres*]

.16 Claim liabilities are the portion of insurance contract liabilities in respect of claims incurred on or before the calculation date. [*passif des sinistres*]

.17 Contingent event is an event that may or may not happen, or that may happen in more than one way or that may happen at different times. [*éventualité*]

.18 Contribution is a contribution by a participating employer or a plan member to fund a benefit plan. [*cotisation*]

.19 Contribution principle is a principle of policyholder dividend determination whereby the amount deemed to be available for distribution to policyholders by the directors of a company is divided among policies in the same proportion as policies are considered to have contributed to that amount. [*principe de contribution*]

.20 Credibility is a measure of the predictive value attached to an estimate based on a particular body of data. [*crédibilité*]

.21 Credit spread, for a fixed-income asset, is the yield to maturity on that asset minus the yield to maturity on a risk-free fixed income asset with the same cash flow characteristics. [*écart de crédit*]

.22 Definitive refers to a matter that is final and permanent rather than tentative, provisional, or unsettled. [*décision définitive*]

.23 Development of data with respect to a given coverage period is the change in the value of those data from one calculation date to a later date. [*matérialisation*]

.24 Explanatory text is text that appears outside of a box in these standards. [*texte explicatif*]

.25 External user is a user other than the actuary's client or employer. Internal user and external user are mutually exclusive. [*utilisateur externe*]

.26 External user report is a report whose users include an external user. [*rapport destiné à un utilisateur externe*]

.27 Financial condition of an entity at a date refers to its prospective ability at that date to meet its future obligations, especially obligations to policyholders, members, and those to whom it owes benefits. Financial condition is sometimes called "future financial condition". [*santé financière*]

.28 Financial position of an entity at a date is its financial state as reflected by the amount, nature, and composition of its assets, liabilities, and equity at that date. [*situation financière*]

.29 To fund a plan is to dedicate assets to its future benefits and expenses. Similarly for "funded" and "funding". [*provisionner*]

.30 Funded status is the difference between the value of assets and the actuarial present value of benefits allocated to periods up to the calculation date by the actuarial cost method, based on a valuation of a pension plan, post-employment benefit plan, or social security program. [*niveau de provisionnement*]

.31 Going concern valuation is a valuation that assumes that the entity to which the valuation applies continues indefinitely beyond the calculation date. [*évaluation en continuité*]

.32 Indexed benefit is a benefit whose amount depends on the movement of an index such as the consumer price index. [*prestation indexée*]

.33 Indicated rate is the best estimate of the premium required to provide for the corresponding expected claims costs, expenses, and provision for profit. [*taux indiqué*]

.34 Insurance contract is a contract under which one party (the issuer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder. Insurance contract includes group insurance, third-party contracts where the owner of the contract and the person who is compensated (the policyholder) differ, and all like arrangements substantively in the nature of insurance. [*contrat d'assurance*]

.35 Insurance contract liabilities in an issuer's statement of financial position are the liabilities at the date of the statement of financial position on account of the issuer's insurance contracts, including commitments, that are in force at that date or that were in force before that date. [*passif des contrats d'assurance*]

.36 Insurer is a federally or provincially licensed insurance company that is an issuer of insurance contracts. Insurer includes a fraternal benefit society and the Canadian branch of a foreign insurer, but does not include a public personal injury compensation plan or a post-employment benefit plan[1]. [*assureur*]

.37 Internal user is the actuary's client or employer. Internal user and external user are mutually exclusive. [*utilisateur interne*]

.38 Internal user report is a report all of whose users are internal users. [*rapport destiné à un utilisateur interne*]

.39 Issuer is the party under an insurance contract that accepts significant insurance risk. [*émetteur*]

.40 Margin for adverse deviations is the difference between the assumption for a calculation and the corresponding best estimate assumption. [*marge pour écarts défavorables*]

.41 Model is a practical representation of relationships among entities or events using statistical, financial, economic, or mathematical concepts. A model uses methods, assumptions, and data that simplify a more complex system and produces results that are intended to provide useful information on that system. A model is composed of a model specification, a model implementation, and one or more model runs. Similarly for "to model". [*modèle*]

.42 Model implementation is one or more systems developed to perform the calculations for a model specification. For this purpose "systems" include computer programs, spreadsheets, and database programs. [*implémentation du modèle*]

.43 Model risk is the risk that, due to flaws or limitations in the model or in its use, the actuary or a user of the results of the model will draw an inappropriate conclusion from those results. [*risque de modélisation*]

.44 Model run is a set of inputs and the corresponding results produced by a model implementation. [*exécution d'un modèle*]

.45 Model specification is the description of the components of a model and the interrelationship of those components with each other, including the types of data, assumptions, methods, entities, and events. [*spécifications du modèle*]

.46 New standards means new standards, or amendment or rescission of existing standards. [*nouvelles normes*]

.47 Periodic report is a report that is repeated at regular intervals. [*rapport périodique*]

.48 Plan administrator is the person or entity with overall responsibility for the operation of a benefit plan. [*administrateur d'un régime*]

.49 Policy liabilities in an insurer's statement of financial position are the liabilities at the date of the statement of financial position on account of the insurer's policies, including commitments, that are in force at that date or that were in force before that date. Policy liabilities consist of insurance contract liabilities and liabilities for policy contracts other than insurance contracts. [*passif des polices*]

.50 Policyholder is a party that has a right to compensation under an insurance contract if an insured event occurs[1]. [*titulaire de police*]

.

.51 Premium liabilities are the portions of insurance contract liabilities that are not claim liabilities. [*passif des primes*]

.52 Prescribed means prescribed by these standards. [*prescrit*]

.53 Property and casualty insurance is insurance that insures individuals or legal persons

- Having an interest in tangible or intangible property, for costs arising from loss of or damage to such property (e.g., fire, fidelity, marine hull, warranty, credit, legal expense, and title insurance); or
- For damages to others or costs arising from the actions of such persons (e.g., liability and surety bonds) and for costs arising from injury to such persons (e.g., automobile accident benefits insurance). [*assurances IARD*]

.54 Provision for adverse deviations is the difference between the actual result of a calculation and the corresponding result using best estimate assumptions. [*provision pour écarts défavorables*]

.55 Public personal injury compensation plan means a public plan

- Whose primary purpose is to provide benefits and compensation for personal injuries;
- Whose mandate may include health and safety objectives and other objectives ancillary to the provision of benefits and compensation for personal injuries; and
- That has no other substantive commitments.

The benefits and compensation provided under such public plans are defined by statute. In addition, such public plans have monopoly powers, require compulsory coverage except for those groups excepted by legislation or regulation, and have the authority to set assessment rates or premiums. [*régime public d'assurance pour préjudices corporels*]

.56 Recommendation means text that appears in a box in these standards. Similarly for "recommend". [*recommandation*]

.57 Related experience includes premiums, claims, exposures, expenses, and other relevant data for events analogous to the insured events under consideration other than the subject experience and may include established rate levels or rate differentials or external data. [*expérience connexe*]

.58 Report is an actuary's oral or written communication to users about his or her work. Similarly for "to report". [*rapport*]

.59 Report date is the date the actuary specifies as such in the report. It usually differs from the calculation date. [*date du rapport*]

.60 Scenario is a set of consistent assumptions. [*scénario*]

.61 Service cost is that portion of the present value of a plan's obligations that an actuarial cost method allocates to a time period, excluding any amount for that period in respect of unfunded accrued liabilities. [*cotisation d'exercice*]

.62 Social security program means a program with all the following attributes regardless of how it is financed and administered:

- Coverage is of a broad segment, or all, of the population, often on a compulsory or automatic basis;
- Benefits are provided to, or on behalf of, individuals;
- The program, including benefits and financing method, is mandated by law;
- The program is not financed through private insurance; and
- Program benefits are principally provided or delivered in the form of periodic payments upon old age, retirement, death, disability, and/or survivorship. [*programme de sécurité sociale*]

.63 Subject experience includes premiums, claims, exposures, expenses, and other data for the insurance categories under consideration. [*expérience visée*]

.64 Subsequent event is an event of which an actuary first becomes aware after a calculation date but before the corresponding report date. [*événement subséquent*]

.65 Trend is the tendency of data values to change in a general direction from one coverage period to a later coverage period. [*tendance*]

.66 User means an intended user of the actuary's work. [*utilisateur*]

.67 Virtually definitive refers to a matter that is almost certain, but that lacks one or more formalities like ratification, due diligence, regulatory approval, third reading, royal assent, or proclamation. However, a decision that still involves discretion at an executive or administrative level is not virtually definitive. [*pratiquement définitive*]

.68 Work means work that is commonly, but not necessarily exclusively, performed by actuaries in assessing, measuring, and evaluating risks and contingencies and usually includes

- Acquisition of knowledge of the circumstances affecting the work that the actuary is undertaking;
- Obtaining sufficient and reliable data;
- Selection of assumptions and methods;
- Calculations and examination of the reasonableness of their result;
- Use of other persons' work;
- Formulation of opinion and advice;
- Reporting; and
- Documentation. [*travail*]

## 1130 Interpretation

**Recommendations**

.01 These standards consist of recommendations and explanatory text.

.02 A recommendation is the highest order of guidance in these standards.

.03 Each recommendation is in boxed text where it is accompanied by its effective date, shown in square brackets.

**Explanatory text**

.04 The explanatory text supports and expands upon the recommendations. The explanatory text consists of definitions, explanations, examples, and useful practices.

**Effective date of recommendations**

.05 The notice of adoption for new standards would indicate their effective date and whether early implementation is permitted and may provide additional direction regarding the application of new standards.

.06 Subject to the notice of adoption, a recommendation applies to work with a calculation date that is on or after the recommendation's effective date. Superseded recommendations that were in effect at the calculation date would apply to work with a calculation date prior to the effective date of new standards unless early implementation is permitted and applied to the work.

**General standards and practice-specific standards**

.07 These standards consist of general standards and practice-specific standards. With the exception noted below, the general standards apply to all areas of actuarial practice. In addition, the standards in part 4000 apply to all areas of actuarial practice if the actuary's work in an area meets the definition of actuarial evidence work.

.08 Usually, the intent of the practice-specific standards is to narrow the range of practice considered acceptable under the general standards.

.09 In exceptional cases, however, the intent of practice-specific standards is to define as acceptable a practice that would not be acceptable under the general standards, in which case that intent is specifically noted by words in a practice-specific recommendation like: "*Notwithstanding the general standards, the actuary should…"*, followed by the explanatory text.

**Drafting**

.10 "Should" is the strongest mandating word in these standards, appearing only in recommendations, often in the expression, "The actuary should…"

.11 "Would" is a suggestive word appearing in the explanatory text, often in the expression, "The actuary would…", and is less forceful than the mandative "should".

.12 "May" is a permissive word, appearing in both recommendations and the explanatory text, often in the expression, "The actuary may…" and often with conditions attached. It defines a safe harbour. For example, in paragraph 1510.01, the recommendation is that "The actuary may use and take responsibility for another person's work if such actions are justified." and the explanatory text describes steps that constitute justification. The actuary who is satisfied that the actions are justified has done all that may be reasonably expected and has therefore complied with accepted actuarial practice, even if the use turns out not to be well-founded.

.13 The examples are often simplified and are not all-inclusive.

## 1140 Judgment

.01 The actuary should exercise reasonable judgment in applying these standards. A judgment is reasonable if it is objective and takes account of

- The spirit and intent of the standards;
- Precepts of ethical and professional conduct intended to guide the conduct of the actuary;
- Common sense; and
- Constraints on time and resources. [Effective February 1, 2018]

**Need for judgment**

.02 While these standards are drafted so that they are, as much as possible, understandable by lay persons, the judgment of the actuary is necessary for their application.

.03 The exercise of judgment is not clear-cut, except perhaps in hindsight. A judgment that is reasonable at its making is not made unreasonable by later hindsight.

.04 A judgment that is completely subjective would not be reasonable even though it may be based on honest belief. A reasonable judgment would be objective and demonstrably take account of the criteria listed in the recommendation and discussed below.

.05 There is a reasonable range of assumptions that may be selected by an actuary for particular work and that might produce materially different results. Sometimes, it is desirable that actuaries produce results within a relatively narrow range, in which case the practice-specific standards may prescribe certain assumptions and/or methods to achieve that purpose.

**Spirit and intent**

.06 In applying a specific standard, it is important to be guided by the spirit and intent behind it.

**Common sense**

.07 A strained interpretation of a recommendation is inappropriate.

.08 An outlandish result or a seeming impossibility of applying the standards would indicate either a misinterpretation of the standards or their inapplicability to the situation.

**Constraint on time and resources**

.09 The actuary would normally perform work in compliance with accepted actuarial practice. However in some circumstances within the scope of an appropriate engagement, the actuary's work may be constrained by available time and resources. In such circumstances, the actuary would adopt an interpretation and application that strikes a reasonable balance between compliance and modifications due to the constraints, after consideration of accepted actuarial practice with respect to materiality and the use of approximations. The actuary would report to the user any deviation from accepted actuarial practice.

## 1150 Accepted actuarial practice

.01 Work in Canada should conform to accepted actuarial practice except when it conflicts with law or the terms of an appropriate engagement. A user of the actuary's work may assume that it is in accordance with accepted actuarial practice except when the actuary reports otherwise. [Effective February 1, 2018]

.02 These standards are the only explicit articulation of accepted actuarial practice for work in Canada. Explanation, examples, and other useful guidance may also be found in

- New standards, not yet effective but whose early implementation is appropriate;
- Educational notes of the Canadian Institute of Actuaries;
- Actuarial principles;
- Exposure drafts;
- Historical records;
- Canadian and international actuarial literature; and
- Practices that are generally accepted among actuaries and that are not in conflict with these standards.

The applicability and the relative importance of this other guidance for particular work is a matter for judgment.

.03 Accepted actuarial practice is sometimes called "generally accepted actuarial practice" (for example, in the Insurance Companies Act (Canada)) or "generally accepted actuarial principles".

## 1160 Scope

.01 These standards apply to work in Canada. [Effective February 1, 2018]

.02 The application of any recommendations beyond their scope should take account of relevant circumstances. [Effective February 1, 2018]

**Work in Canada vs. work in another country**

.03 The distinction between work in Canada and work in another country depends primarily on the ultimate purpose of the work. It does not depend on where the actuary lives or where the actuary happens to be when doing the work.

.04 Work in compliance with the laws or customs of a country or a particular region within that country is work in that country. Examples include

- A valuation of the liabilities of a pension plan of a Canadian subsidiary of a U.S. multinational for the consolidated financial statements of the multinational is work in the U.S.
- If the work relates to taxation under the U.S. *Internal Revenue Code*, the work is work in the U.S. Thus, a valuation of the policy liabilities of the U.S. branch of a Canadian insurer for the insurer's U.S. income tax return is work in the U.S.
- If the work relates to litigation under U.S. law before a U.S. court, the work is work in the U.S. Thus, a report to the lawyer of a Canadian defendant insured by a Canadian insurer on a claim for damages litigated under U.S. law in a U.S. court is work in the U.S.

.05 There may be cases when the distinction is not clear; for example, advice to a Canadian insurer on products to be sold outside Canada. In some of those cases, accepted actuarial practice may be the same in both countries, so the distinction does not matter. If the distinction matters, the actuary would, if practical, agree with the user and report on the appropriate practice and, failing agreement, would report the implications of the distinction.

**Work outside Canada**

.06 The best guidance for work in another country is the accepted practice for actuarial work in that country. This encompasses the formal guidance that the actuarial profession in that country provides for work in that country. If that guidance does not exist or is limited, these standards may provide useful guidance. The general standards are more likely to provide useful guidance than the practice-specific standards: in either case, however, the actuary would take account of differences between the laws and customs of the other country and those of Canada.

# 1200 Permitted Deviations

## 1210 Conflict with law

.01 If accepted actuarial practice conflicts with the law, the actuary should comply with the law, but should report the conflict and, if practical, useful, and appropriate under the terms of the engagement, report the result of applying accepted actuarial practice. [Effective February 1, 2018]

.02 It is practical to report the result of applying accepted actuarial practice unless the work to do so is onerous or the needed data are unobtainable. If a quantified result is not practical, a verbal description of the result is better than no report.

.03 Description of the conflict and disclosure of its effect is useful in order to

- Disclose that the work deviates from accepted actuarial practice;
- Disclose that the work, insofar as the conflict is concerned, is in accordance with the requirements of the legislator or regulator, which vary by jurisdiction, rather than accepted actuarial practice, which is uniform across Canada; and
- Promote eventual adoption of accepted actuarial practice into law.

In determining the usefulness of reporting, the actuary would take into account the needs of the various users.

.04 Accepted actuarial practice does not conflict with the law where the law mandates a practice, or limits practice to a range, that is within the range of accepted actuarial practice.

## 1220 Conflict with terms of engagement

.01 If accepted actuarial practice conflicts with the terms of an appropriate engagement, the actuary may comply with the terms of that engagement, but should report the conflict and, if practical, useful, and appropriate under the terms of that engagement, report the result of applying accepted actuarial practice. [Effective February 1, 2018]

.02 Usually, the actuary is responsible for all aspects of his or her work and performs it in accordance with accepted actuarial practice. The engagement to which the recommendation applies is usually one in which one or more aspects of work are omitted or are stipulated by the client or employer or the terms of a benefit plan. Examples include situations where

- The actuary uses, but does not take responsibility for, the software system, or the work, of the staff of the client or employer; and
- The client or employer or the terms of a benefits plan stipulates an assumption or a method that is not in accordance with accepted actuarial practice.

.03 Conflict between accepted actuarial practice and the law is not the same as conflict between accepted actuarial practice and the terms of an engagement. In the case of an engagement whose terms call for deviation from accepted actuarial practice, the actuary has discretion to accept or not to accept the engagement.

.04 The practicality and usefulness of reporting a result in accordance with accepted actuarial practice are the same as for subsection 1210, Conflict with law.

## 1230 Unusual and unforeseen situations

.01 Deviation from a particular recommendation or other guidance in these standards is accepted actuarial practice for an unusual or unforeseen situation for which the standards are inappropriate[2]. [Effective February 1, 2018]

.02 The actuary would report without reservation when deviating from a particular recommendation or other guidance in these standards in accordance with this subsection 1230, but it may sometimes be appropriate to describe and justify the deviation in the report.

## 1240 Materiality

.01 Deviation from a particular recommendation or explanatory text in these standards is accepted actuarial practice if the effect of so doing is not material. [Effective February 1, 2018]

[2] Actuaries are encouraged to bring such situations to the attention of the Actuarial Standards Board, who may wish to consider how standards might be improved so that they do contemplate such situations.

.02 "Material" has its ordinary meaning, but is judged from the point of view of a user, having regard for the purpose of the work. Thus, an omission, understatement, or overstatement is material if the actuary expects it to affect either the user's decision-making or the user's reasonable expectations. When the user does not specify a standard of materiality, judgment falls to the actuary. That judgment may be difficult for one or more of these reasons:

- The standard of materiality depends on how the user uses the actuary's work, which the actuary may be unable to foresee. If practical, the actuary would discuss the standard of materiality with the user. Alternatively, the actuary would report the purpose of the work as precisely as possible, so that the user is warned of the risk of using the work for a different purpose with a more rigorous standard of materiality.
- The standard of materiality may vary among users. The actuary would choose the most rigorous standard of materiality among the users.
- The standard of materiality may vary among uses. For example, the same accounting calculations may be used for a pension plan's financial statements and the financial statements of its participating employer. The actuary would choose the more rigorous standard of materiality between those two uses.
- The standard of materiality depends on the user's reasonable expectations, consistent with the purpose of the work. For example, advice on winding-up a pension plan may affect each participant's share of its assets, so there is a conflict between equity and practicality. The same is true for advice on a policy dividend scale.

.03 The standard of materiality also depends on the work and the entity that is the subject of that work. For example,

- A given dollar standard of materiality is more rigorous for a large than for a small entity;
- The standard of materiality for valuation of an insurer's policy liabilities is usually more rigorous for those in its financial statements than for those in a forecast in financial condition testing;
- The standard of materiality for data is more rigorous for calculating an individual benefit (such as in a pension plan wind-up) than for a valuation of a group benefit plan (such as a going concern valuation of a pension plan); and
- The standard of materiality for work involving a threshold, such as a regulatory capital adequacy requirement calculation of an insurer or a statutory minimum or maximum funding level for a pension plan would become more rigorous as the entity approaches that threshold.

.04 The actuary would not report an immaterial deviation from a particular recommendation or other guidance in these standards except if doing so assists a user to decide whether the standard of materiality is appropriate for that user.

.05 The recommendation applies to both calculation and reporting standards.

**Calculation standards**

.06 The result of applying a recommendation may not differ materially from the result of a simpler practice requiring less time and expense. For example, the practice-specific recommendations for valuation of insurance contract liabilities for term life insurance have little effect on an issuer whose volume of term life insurance is trivial. To ignore them in that situation is accepted actuarial practice if it helps the actuary to concentrate time and resources on material items.

.07 In considering materiality, it is not appropriate to net items that are reported separately. For example, if simple practices requiring less time and expense than those in the recommendations materially overstate the premium liabilities and materially understate its claim liabilities, but do not materially affect their sum, the understatement and overstatement are each material if the two items are reported separately. In considering materiality, it is, however, appropriate to net components within a separately reported item. To continue the example, it would be appropriate to net the overstatement of premium liabilities with the understatement of claim liabilities if only the sum of the two (i.e., the insurance contract liabilities) is reported.

.08 The effect of using a simpler practice requiring less time and expense than those in the recommendations may be conservative or not conservative. Usually, the criterion of materiality is the same in both cases.

**Reporting standards**

.09 The result of applying a recommendation may provide information that is not useful. For example, disclosure of a material change in the basis for valuing the liabilities with respect to a material class of a benefit plan's members is not useful if that class was trivial at the previous valuation. Also, description of immaterial provisions of a benefit plan is not useful. To ignore the recommendation is accepted actuarial practice in that situation.

# 1300 The Engagement

## 1310 Accepting and continuing an engagement

.01 In accepting an engagement, the actuary should agree on its terms with the actuary's client or employer and be satisfied that it is an appropriate engagement. [Effective February 1, 2018]

.02 In performing the engagement, if the actuary becomes aware of information that, if known beforehand, would have been an impediment to acceptance of the engagement, the actuary should

- Renegotiate the engagement to remove the impediment;
- Discontinue the engagement; or
- Provided that the engagement continues to be an appropriate engagement, report the impediment and its implications. [Effective February 1, 2018]

.03 The actuary would consider consultation with the predecessor actuary, if any, to determine whether there is any reason not to accept the engagement.

**Terms of the engagement**

.04 The likelihood that work is satisfactory to all users concerned is enhanced by a clear understanding between the actuary and the client or employer on the terms of the engagement. Detailed identification of the time and resources involved, especially if they are substantial, and of the information needed to be communicated to and by the actuary, especially if it is sensitive or confidential, will avoid misunderstanding.

**Appropriateness of engagement**

.05 The following guidance is useful in judging if the engagement is an appropriate engagement:

- An engagement is prima facie appropriate if there are practice-specific standards that apply to it, especially if it does not call for a deviation from accepted actuarial practice.
- An engagement's appropriateness is not likely affected if the actuary's client or employer selects particular assumptions as part of the terms of the engagement and the report describes the assumption and identifies the source, or chooses a value for certain assumptions from within a range selected by the actuary.
- An engagement to report on alternative scenarios or "What if?" questions is appropriate, given appropriate disclosure.

- An engagement is less likely to be appropriate if it denies reasonable opportunity for an external user to question the actuary about his or her report.

.06 An engagement may involve a duty of confidentiality that conflicts with a recommendation on disclosure in reporting. That engagement would be appropriate, however, and the duty of confidentiality would supersede (at least temporarily) the duty of disclosure, if

- Confidentiality is necessary for the legitimate business objective of the client or employer;
- The extent of the information to be kept confidential is reasonable;
- The length of time for which it is to be kept confidential is reasonable; and
- The duty of confidentiality permits reasonable exceptions; for example, if the actuary is permitted to disclose the information to, and to discuss the engagement with, an auditor or a regulator.

.07 For example, the engagement may be appropriate if the actuary temporarily withholds knowledge of

- A mistake that favours his or her client in the report of the actuary engaged by the other side in litigation;
- The imminent closure of a participating employer's Canadian operations and the consequent job loss and winding-up of the plan in giving advice on its funding, but the actuary would consider the need for an early revaluation or wind-up valuation; or
- An insurer's imminent acquisition by new shareholders who will alter its business plan in reporting in the insurer's financial statements, but the actuary would consider the implications of the new business plan in reporting to the insurer's directors on financial condition.

.08 That engagement would not be appropriate, however, if the information is to be kept confidential in order to conceal improper business conduct, or to withhold information from users of the actuary's work who may reasonably expect the actuary to report it to them.

.09 Any duty of confidentiality would give way to a duty of disclosure if disclosure is mandated by law, or if disclosure is required by a professional body to whom the actuary is subject.

.10 Whether an engagement is appropriate depends on the actuary as well as on the engagement. For example, an actuary would not accept an engagement to perform work that the actuary is not qualified to do or where the actuary has an undisclosed conflict of interest.

**Subsequent information**

.11 While performing the engagement, the actuary may become aware of information that, if known beforehand, would have been an impediment to acceptance of the engagement. For example,

- The actuary's understanding of the engagement differs from that of the client or employer;
- The data are not sufficient or not reliable and cannot be remedied; or
- Promised resources are not forthcoming and a substitute for them is not practical.

.12 Renegotiation that removes the impediment would usually be the preferred alternative. Discontinuance would be the only alternative if the new information reveals the engagement not to be appropriate and renegotiation to make it so is impractical, which would be the case, for example, if an appointed actuary is denied access to needed information.

.13 Failing renegotiation or discontinuance, the actuary would deal with the impediment by reporting it and its implications. Description of the implications would include both qualitative and quantitative aspects and their effect on the actuary's opinion.

## 1320 Financial interest of the actuary

.01 The financial interest of the actuary should not influence the result of the actuary's work. [Effective February 1, 2018]

## 1330 Financial interest of the client or employer

.01 The financial interest of the actuary's client or employer should not influence the result of the actuary's work except to the extent that the client or employer selects assumptions or methods for the work. [Effective February 1, 2018]

.02 The actuary's client or employer may have a financial interest in the result of the actuary's work. For example, it may be in the client's or employer's interest to maximize or minimize the result. That is usually the case when the actuary's client is one side of opposing interests; for example, the plaintiff or defendant in litigation, the purchaser or vendor in a sale, and the employer or union in labour negotiations.

.03 In such a case, the actuary's duty of professionalism supersedes the duty of service to the client or employer.

.04 In giving advice to a participating employer regarding the funding of a benefit plan, the actuary may first calculate a range, at any point of which funding would be appropriate. That range is the crux of the work, so a participating employer's financial interest would not influence its calculation. It is, however, appropriate and usually desirable for the actuary to consult the participating employer in the selection of the recommended funding within the range. The participating employer's financial interest—for example, the participating employer's tolerance of fluctuation in the recommended rate of funding between one funding period and the next—would be taken into account in that consultation.

.05 Note, however, that the recommendation does not preclude the actuary's use of assumptions or methods selected by the client or employer in an appropriate engagement, but the actuary would report such use.

.06 Note also that the purpose of the work will influence the actuary's selection of assumptions and methods. The financial interest of the client or employer may shape the purpose of the work if the engagement is an appropriate engagement and the purpose is reported.

## 1340 General knowledge

.01 The actuary should have adequate knowledge of the conditions in the practice area in which the actuary is working. [Effective February 1, 2018]

.02 Where the actuary's work in a practice area meets the definition of actuarial evidence work, the actuary should have adequate knowledge of the conditions in both the practice area in which the actuary is working and the actuarial evidence practice area. [Effective February 1, 2018]

.03 The relevant conditions may include legislation, accounting standards and policies, taxation, the financial markets, family law, and court practices. The relevant legislation depends on the engagement, and may include legislation governing securities, pensions, insurance, workers' compensation, and employment standards.

## 1350 Knowledge of the circumstances affecting the work

.01 The actuary should take into account the circumstances affecting the work that the actuary is undertaking. [Effective February 1, 2018]

.02 The circumstances affecting the work include the purpose of the work, the terms of the appropriate engagement under which the work is being performed, and the application of the law to the work.

.03 The relevant knowledge for a corporate entity or benefit plan is that of the operations of the entity itself and may include that of the industry in which the entity operates. Usually, the entity is the actuary's client or employer but may be a proposed acquisition or merger partner of the client or employer.

.04 In the case of a benefit plan, the entity is the plan itself, but, depending on the engagement, knowledge of the business conditions of the participating employer(s) may also be relevant.

.05 The relevant knowledge for calculation with respect to an individual is the demographics of the individual and the context of the calculation.

.06 Additional conservatism in making a calculation is not a substitute for knowledge of the circumstances affecting the work.

# 1400 The Work

## 1410 Approximation

.01 An approximation is appropriate if it reduces the cost of, reduces the time needed for, or improves the actuary's control over, work without affecting the result. [Effective February 1, 2018]

.02 If the actuary reports an appropriate approximation, the report should avoid unintended reservation. [Effective February 1, 2018]

.03 If the appropriateness of an approximation is doubtful, the actuary should report its use with reservation. [Effective February 1, 2018]

.04 Like materiality, to which it is related, approximation pervades virtually all work and affects the application of nearly all standards. The words "approximation" and "approximate" seldom appear in these standards, but are understood throughout them.

.05 Approximation permits the actuary to strike a balance between the benefit of precision and the effort of arriving at it.

**Approximation in selection of a model**

.06 Reality is complex. A simple model reduces not only the time and expense of work but also the risk of calculation and data error.

.07 The appropriateness of a simplification depends on the circumstances affecting the work and the purpose of the work. For example, in selecting a model for advice on funding a pension plan, it may be appropriate to allow for indexing by modifying the assumption for a contingency of which the model takes account, such as the investment return assumption, to arrive at an appropriate composite assumption.

**Approximation in the selection of assumptions**

.08 Simplification of an assumption may be an appropriate approximation. For example,

- Deaths occur continuously over a year; for simplicity, assume that they all occur at the middle of the year;
- Members of a pension plan with early retirement reductions that approximate full actuarial reductions retire at various rates between, say, ages 55 and 65; for simplicity, assume that they all retire at, say, age 62; and
- If the members of a pension plan who die before retirement are entitled to a benefit that is roughly the same as the present value of the retirement benefit, for simplicity, assume that death rates before retirement are equal to zero.

.09 To make no assumption about a contingency is usually tantamount to assuming a zero rate for that contingency, which is rarely appropriate in itself, but may be appropriate when combined with an adjustment to a related assumption. For example, in some circumstances, the calculation of the liabilities in a benefit plan using an explicit wage and price inflation assumption may be approximated by calculating the liabilities without an explicit wage and price inflation assumption and using a lower liability discount rate assumption representative of the real rate of return.

**Approximation by sampling**

.10 A well-chosen sample avoids the extra work of an examination of the entire universe.

**Approximations respecting data**

.11 Data may be defective. For example, a benefit plan's records may lack the date of birth of certain members. In some cases there is an appropriate approximation, for example, sampling, or extrapolation from similar situations for which data are available.

**Approximation vs. assumption**

.12 A criterion of the appropriateness of an approximation is its effect on the result. If the actuary approximates but is unable to assess the resulting error, the approximation becomes, in effect, an assumption. For example, data are missing and it is not practical to get them. The actuary would consider whether their lack is so important that a report with reservation is necessary, but in any case is obliged to make an assumption about them in order to do the work.

**Reporting approximations**

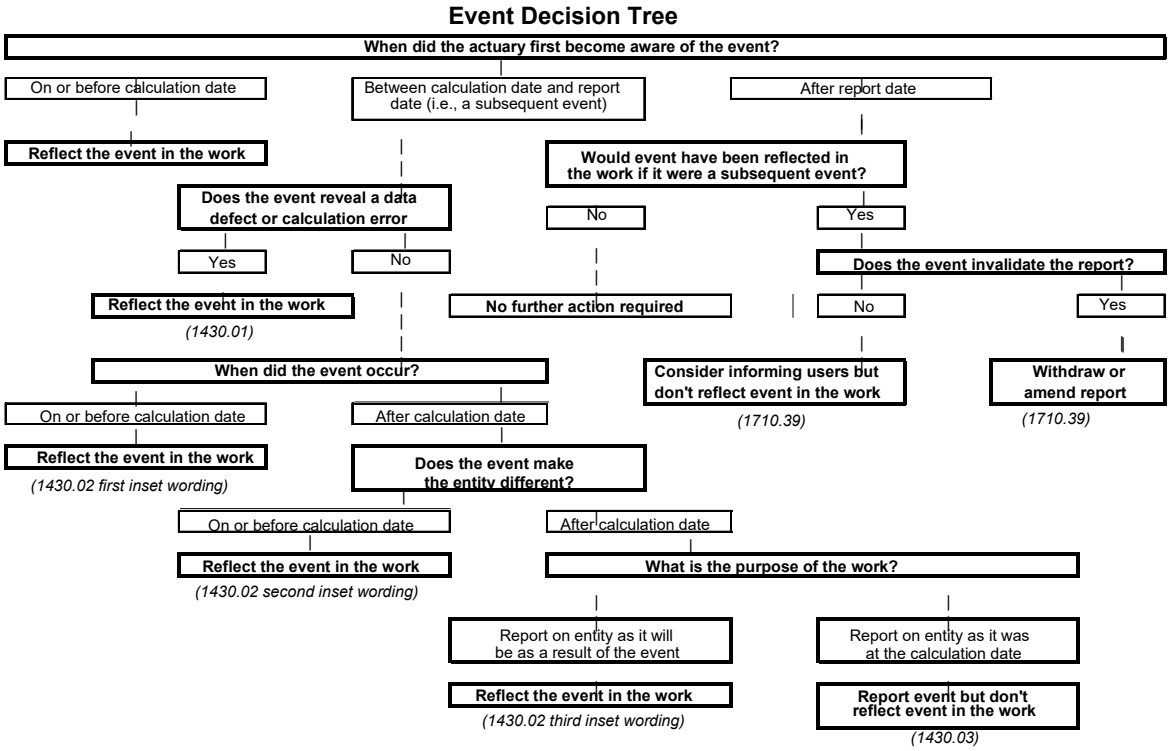
.13 To report appropriate approximations in a longer report may provide information useful to users, but such reporting would avoid unintended reservation, as the use of approximations is a usual part of work. The pervasiveness of approximations in work makes their complete reporting impractical.

.14 If the actuary reports an implicit assumption used as an approximation, he or she would also report the corresponding explicit assumption or assumptions. Similarly, if an actuary reports approximations for two offsetting assumptions that result in the same net effect as the underlying explicit assumptions, the actuary would also report the explicit assumptions.

.15 The actuary would not usually use an approximation whose appropriateness is doubtful. That may be unavoidable, however, if data are insufficient or unreliable or if needed resources are lacking. If the engagement is an appropriate engagement, the actuary would report with reservation the use of the approximation, so that a user is aware of a limitation to the actuary's work.

## 1420 Event

.01 The following decision tree may assist an actuary in deciding how to reflect an event in the work, if the actuary determines that the event makes the entity different.



## 1430 Subsequent events

.01 The actuary should correct any data defect or calculation error that is revealed by a subsequent event. [Effective February 1, 2018]

.02 For work with respect to an entity, the actuary should take a subsequent event into account (other than in a pro forma calculation) if the subsequent event

- Provides information about the entity as it was at the calculation date;
- Retroactively makes the entity different at the calculation date; or
- Makes the entity different after the calculation date and a purpose of the work is to report on the entity as it will be as a result of the event. [Effective February 1, 2018]

.03 The actuary should not take the subsequent event into account if it makes the entity different after the calculation date and a purpose of the work is to report on the entity as it was at the calculation date. Nevertheless, the actuary should report that subsequent event. [Effective February 1, 2018]

**Classification**

.04 A subsequent event is relevant to the recommendation if it reveals an error, provides information about the entity, or is a decision that makes the entity different.

.05 The actuary would correct an error revealed by a subsequent event. The actuary would classify each subsequent event other than those that reveal errors and, depending on the classification, the actuary would either

- Take that event into account; or
- Report that event, but not take it into account.

**Entity**

.06 Examples of entities are

- The pension plan, in the case of an actuary doing a valuation of a pension plan;
- The block of annuity business, in the case of an actuary calculating the insurance contract liabilities for an issuer's annuity business;
- A combination of the pension plan and the member's specific data, in the case of the determination of a member's individual entitlement under a pension plan; and
- The insurance company, in the case of an actuary valuing the insurance contract liabilities of an insurance company.

**Event provides information about entity as it was or retroactively makes entity different**

.07 Examples of subsequent events that provide information about an entity as it was at the calculation date are

- Publication of an experience study that provides information for selection of assumptions;
- Reporting of a claim that was incurred on or before the calculation date; and
- Adoption of a pension plan amendment prior to the calculation date of which the actuary becomes aware after the calculation date.

.08 Examples of events that retroactively make the entity different at the calculation date are definitive or virtually definitive decisions, made after the calculation date but effective on or before the calculation date, to

- Wind-up a pension plan, partially or fully;
- Sell a portion of a participating employer's business and consequently to spin off the corresponding members from the participating employer's pension plan;
- Amend the benefits of a pension plan;
- Transfer a portion of an insurer's policies to another insurer; or
- Invoke a judicial decision that nullifies or significantly modifies the law affecting insurance claims.

.09 If an event provides information about the entity as it was at the calculation date or provides information that retroactively makes the entity different at the calculation date, the effect of the subsequent event on the work is the same as if the actuary first became aware of the information on or before the calculation date and the actuary would not report the event as a subsequent event. That is, the actuary would report the event only to the extent that the event would have been reported had the actuary first become aware of the information before the calculation date.

**Event makes entity different after**

.10 If the subsequent event makes the entity different after the calculation date, the purpose of the work determines whether or not the actuary takes the event into account.

.11 If the subsequent event makes the entity different after the calculation date and the purpose of the work is to report on the entity as it will be as a result of the event, the actuary would take that event into account and would describe it in reporting.

.12 If the subsequent event makes the entity different after the calculation date and the purpose of the work is to report on the entity as it was at that date, the actuary would not take that event into account but would report the event since it would affect the entity's future operations and the actuary's subsequent calculations.

**Classification not clear**

.13 The classification of a subsequent event may be unclear, at least a priori, although the circumstances affecting the work and the actuary's engagement may make it clear. The following are examples of such events:

- A precipitous fall in the stock market. For financial reporting, one can argue that the stock market crash provides additional information about the entity as it was at the calculation date, because the crash is an indicator of the outlook for common share investments at that date; alternatively, one can argue that the crash makes the entity different only after the calculation date since it creates a new situation. The new situation would be reflected in the financial statements for the subsequent financial reporting period.
- A salary freeze for employees who are members of a pension plan. If the salary freeze is a correction of excessive salaries, it provides additional information about the entity as it was at the calculation date, because the freeze is an indicator of the outlook for salaries at the calculation date. If the salary freeze deals with a recent problem, it indicates a change in conditions that makes the entity different after the calculation date. In either case, the actuary would consider the effect of the freeze on the employees' pension benefits. It may be that the freeze will have a lasting effect. Alternatively, it may be that the freeze will be compensated for by higher salaries later on, so that the salary inflation assumption based on historical trends continues to be valid.
- Default on a bond. If the default was the culmination of a gradual deterioration in its issuer's financial circumstances, most of which had occurred before the calculation date but that was not apparent until revealed by the default, the default provides additional information about the entity as it was at the calculation date. If the default was precipitated by a catastrophe, it provides information about a change in conditions that makes the entity different after the calculation date.
- Insolvency of an insurer's reinsurer. This is similar to default on a bond. If the insolvency was the culmination of a gradual deterioration in the reinsurer's financial circumstances, most of which had occurred before the calculation date but that was not apparent until revealed by the insolvency, the insolvency provides information about the entity as it was at the calculation date. If the insolvency was precipitated by a catastrophe, it provides information about a change in conditions that makes the entity different after the calculation date.

**Reporting**

.14 Sometimes, either because the actuary considers it appropriate or the terms of the work require it, the actuary may report as an alternative the opposite calculation; i.e., one that does not take the subsequent event into account when the main calculation does, or that takes the subsequent event into account when the main calculation does not. For example, in a province for which the calculation date for a pension valuation following marriage breakdown is the date of separation, a subsequent event may be the early retirement of the plan member at some time between the calculation date and the report date. The actuary would consider reporting values assuming that this subsequent event had been an established intention at the calculation date, instead of or in addition to retirement scenarios otherwise recommended in the practice-specific standards. In such cases, the actuary would make the same calculations regardless of the purpose of the work but the reporting thereof would depend on the purpose of the work.

## 1440 Data

.01 The actuary should apply such procedures as are necessary for the actuary to arrive at a conclusion as to the sufficiency and reliability of the data. [Effective February 1, 2018]

.02 Data relevant to the work may include experience data, membership or policyholder data, census data, claims data, asset and investment data, economic data, operational data, benefit definitions, and policy or contract terms and conditions and other data relevant to the work.

.03 Sources of data may include data obtained from inventory or sampling methods. Data may be obtained directly by the actuary or may be provided to the actuary by the client, by an accountant or auditor, by a government or statistical body, from a financial statement, or by others. Data may be specific to the client. Where data specific to the client are not available or not relevant, the actuary would consider using industry data, population data, or other published data with suitable adjustments where relevant and appropriate.

**Sufficiency and reliability**

.04 Data are sufficient if they include the needed information for the work. For example, participants' dates of birth are needed to value the liabilities of a pension plan.

.05 Data are reliable if they are sufficiently complete, consistent, and accurate for the purposes of the work.

.06 The actuary would test the sufficiency and reliability of (i.e., validate) the data as may be appropriate for the work but is not normally required to perform a detailed audit and is not responsible for discovering falsified or misleading data. If the terms of an appropriate engagement prevent the actuary from performing a validation of the data, the actuary would so report, and report any apparent or evident shortcomings in the data.

.07 Validation of the data may include reconciliation against financial statements and books of account or other external data, examination of internal and external consistency, comparison with prior periods, availability of independent confirmation from other sources, or detailed confirmation using sampling techniques.

.08 If sufficient and reliable data cannot be obtained or the actuary is unable to ascertain the sufficiency or reliability of the data the actuary would, after first attempting to rectify the data, consider whether to report with reservation in respect of the data or to decline to perform the work.

.09 Data may be rectified by obtaining corrected, more complete, alternative, additional, or supplementary data; by making assumptions with respect to incomplete data; or by making adjustments to the data.

.10 If assumptions or adjustments applied to data by the actuary may cause material uncertainty or bias in the results of the work, the actuary would so report and would report any limitations on the use of the work product where appropriate.

**Reliance on others**

.11 The actuary usually uses data prepared by another party such as the client, an independent administrator, an auditor, a government body, or an external association. When placing reliance on such data, the actuary would consider the qualifications, competence, integrity, and objectivity of the party providing the data.

## 1450 Models

.01 When the work involves the use of a model, the actuary should

- choose a model appropriate to the purpose and requirements of the work; and
- understand any limitations in the model that might make the results of the model inappropriate for the intended purpose or might produce a misleading result. [Effective January 1, 2018]

.02 Like approximation, models pervade virtually all work and affect the application of most standards. The word "model" seldom appears in the standards, but is understood throughout them.

**Amount of effort required**

.03 The amount of effort in validation, documentation and risk mitigation would depend primarily on the influence that the model has on the decisions that it supports, and to a lesser extent on the complexity of the calculations and how they are performed. The actuary would determine how much effort is required for a particular model taking into account the use of the work and the benefit that users would be expected to obtain from enhanced diligence.

- Some models are so simple or otherwise have such low model risk that the actuary is able to exercise appropriate diligence without formal documentation or reporting. Examples of such models are
  - models that are so simple that they could be performed effectively manually; and
  - models that are used solely to validate other models that are used in the actuary's work.
- Some models are used repeatedly from the same model specification and the same model implementation but with different input data and/or assumptions. In that case, the diligence for choosing a model and for validating the model specification and model implementation is normally done only once. Documentation for each model run would normally be limited to noting the inputs and the version of the model used; and
- Some models would require extra diligence because of greater financial significance, increased complexity, or greater uncertainty about the fit of the model to the more complex system it represents.

**Appropriate Model**

.04 A model is appropriate and is used appropriately if

- the model enables the actuary to better understand a complex reality, at a reasonable cost, while maintaining the aspects of that reality that are important to the work;
- the model specification indicates that the intended purpose can be achieved by the model;
- the model implementation has been verified as an accurate representation of the model specification;
- each model run uses input data and assumptions consistent with the model specification; and
- each model run is interpreted as set out in the model specification.

A standard actuarial method used within a model in its proper context would be considered appropriate without further justification; for example, actuarial present value method for a pension valuation and the chain ladder method and Bornhuetter-Ferguson method for unpaid claims liabilities.

## 1460 Quality Assurance

.01 This subsection 1460 applies to quality assurance processes that are at the instigation of the actuary responsible for the work. Such processes include quality control in the actuary's firm or employer as well as review by persons external to the actuary's firm or employer.

.02 The actuary should implement appropriate quality assurance processes prior to the release of work to users. [Effective July 1, 2019]

.03 In deciding what quality assurance processes are appropriate and proportionate, whether different processes are suitable for different elements of the work, and when the processes would be carried out, the actuary would consider the relevant circumstances, including:

- The degree of difficulty of the various elements of the work, the extent to which professional judgment is required and the overall complexity of the work;
- The purpose of the work and the extent (if any) to which the users may reasonably be expected to challenge it;
- The significance of the work, including any financial, reputational or other consequences for the users;
- The reasonable expectations of the users;
- Whether the way in which the work is carried out makes it vulnerable to errors;
- The novelty of the work and the actuary's experience in performing similar engagements; and
- Whether there are legislative or regulatory requirements for the work to be peer reviewed.

.04 Quality assurance processes include calculation control procedures and model validation, as described in subsection 1470, calculation result examination as described in subsection 1480, self-checking of the work, repetition of the work and peer review. Appropriate quality assurance processes may differ for different elements of the work.

.05 Peer review is a process by which one or more components of an actuary's work are considered by at least one other individual for the purpose of providing assurance as to the quality of the work in question. Peer review can be an important component of the quality assurance process for an actuary's work.

.06 The actuary should select a peer reviewer with the appropriate experience and expertise to perform the peer review. If a person is qualified to have performed the work to be reviewed, then that is prima facie evidence that the person is also qualified to perform the peer review. [Effective July 1, 2019]

.07 The actuary would consider to what extent any peer review should be in the form of independent peer review, whereby one or more components of an actuary's work are considered by at least one other individual who is not otherwise involved in the work in question, who has the appropriate experience and expertise to perform the peer review, and is in a position to effectively challenge the work. The perceived objectivity of a reviewer is enhanced if the reviewer is independent of the actuary performing the work.

.08 Where one or more individuals is involved in the quality assurance processes, the actuary would clarify each person's role and responsibilities.

.09 For some types of work, particularly some engagements of actuarial evidence work, peer review may not be required due to the circumstances affecting the work. The absence of peer review of an actuary's work would not necessarily be considered as an indication of a weakness in the quality of assurance processes applied to the work. Where the actuary is expected or required to be independent in performing the work, the scope of the peer review would be defined so as not to impair such independence.

## 1470 Control

.01 Control procedures that detect errors and decrease the effect of errors should be performed for calculations. [Effective February 1, 2018]

.02 To mitigate model risk, the actuary should perform model validation and employ other strategies appropriate for the financial significance of the results and the complexity of the model. [Effective January 1, 2018]

.03 A calculation that is data-intensive, that is complex, that involves physically separate steps like manual and data processing steps or parallel data processing steps, or especially, a combination of them, is prone to error that appropriate control procedures may prevent or, failing prevention, detect. Appropriate control procedures also help to meet the need for consistency between the actuary's work and other related work; for example, a uniform cut-off date in the preparation of financial statements.

.04 Examples of control procedures are procedures to ensure that

- All steps in the calculation are coordinated;
- All steps in the calculation have been performed and checked;
- The actuary's data processing does not corrupt the data supplied to the actuary;
- Established procedures (for example, those for a prior period) are not changed inadvertently; and
- Changes in established procedures are made in an orderly manner.

.05 Examples of control tools are

- Random sampling;
- Spot checks; and
- Audit trails.

.06 The actuary would test that the model implementation uses the data and assumptions as intended by the model specification. The actuary would also verify that the methods used by the model implementation function as intended by the model specification. The reasonableness of the model run may be tested by using alternative models. Various components of a complex model may be compared to results obtained by separate models.

.07 The actuary would validate that the model specification is suitable for its intended purpose. For example, a stochastic model may be more suitable than a deterministic model for the valuation of minimum guarantees in some life insurance policies.

.08 Strategies to mitigate model risk are also pertinent to models developed by third parties and those for which the actuary has limited access to intermediate results, but the range of strategies may be more limited than with other models.

.09 In assessing a model's suitability, the actuary would understand the model's basic operations, important relationships, major sensitivities, limitations, strengths, and potential weaknesses.

.10 When a model is to be used for stress tests or is stochastic, the actuary would give appropriate consideration to the statistical distributions used and the magnitude and behaviour of tail events in light of the nature of the work.

## 1480 Reasonableness of result

.01 The actuary should examine the reasonableness of a calculation's result. [Effective February 1, 2018]

.02 As a result of defective data, defective computer software, an accumulation of individually biased assumptions, or the like, a calculation, especially a complex one like a valuation or financial forecast, may be prone to error that checking of the calculation's steps does not reveal but that an examination of its result may reveal. Such an examination is therefore useful and prudent.

.03 The examination would consider simple questions like the following.

- How does the result compare to the corresponding result for a prior period or a similar case, or to a related but independently calculated amount? Comparison of a benchmark may be more meaningful than comparison of the result. Examples of a benchmark are the forecasted number of retirees divided by the forecasted number of active employees, the loss ratio implied by claim liabilities, and the change during the year of the result.
- How does the result compare to the corresponding result of a rough approximation?
- Does the result make common sense?

.04 The answers to such questions may indicate a need for more work.

## 1490 Documentation

.01 The actuary should use his or her best efforts to compile and secure the retention of appropriate documentation. [Effective February 1, 2018]

.02 Documentation consists of letters of engagement, working papers, meeting notes, memoranda, correspondence, reports, copies or excerpts of company or plan data and documents, and work plans. Appropriate documentation describes the course of the work and its conformity with accepted actuarial practice.

.03 Both professional and legal needs may affect the length of time during which documentation is to be retained.

.04 The actuary's documentation for a model, if required, would typically include

- the intended purpose of the model;
- the appropriateness of the model specification for the intended purpose;
- the limitations of the model specification relevant to the model's intended purpose;
- the testing of the model implementation; and
- the presence of appropriate mitigating strategies for model risk.

.05 Model documentation would typically be sufficiently detailed to enable another actuary knowledgeable in the matters at hand to form an assessment of the judgments made and of the reasonableness of the model run.

.06 When a model is based in whole or in part on a model developed by a third party, the actuary would document how the actuary assessed the model as being appropriate for the purpose.

.07 The actuary should document the quality assurance processes that were followed in performing the work. [Effective July 1, 2019]

# 1500 Another Person's Work

## 1510 Actuary's use of another person's work

.01 The actuary may use and take responsibility for another person's work if such actions are justified. If the actuary uses but does not take responsibility for another person's work, the actuary should so report. [Effective February 1, 2018]

.02 Where the work involves the use of data provided by another person, subsection 1440 Data applies.

.03 Use of the work of other persons is a usual, indeed often inevitable, part of work. The actuary uses and takes responsibility for the work of colleagues and assistants; that use is usually straightforward because the actuary is able to assess the appropriateness of their work.

.04 If the actuary uses the work of a person other than colleagues and assistants, the actuary may or may not take responsibility for that person's work. Taking responsibility may require more work of the actuary and may expose the actuary to risk of legal liability, but may give the user greater confidence that the other person's work is appropriate.

.05 The actuary would not take such responsibility if doing so would lead a reasonable person to believe that the actuary possessed and purported to exercise the skill and learning of a duly qualified professional in that other person's profession.

.06 If the actuary does not take such responsibility, the actuary reports with reservation and the user would seek alternative assurance that the other person's work is appropriate, which may or may not be practical.

**Use and take responsibility**

.07 The actuary may use and take responsibility for another person's work, given confidence that such actions are justified as a result of considerations such as the following:

- Early and periodic communication with the other person;
- Confidence in the other person's qualifications, competence, integrity, and objectivity;
- The other person's awareness of how the actuary intends to use the other person's work;

- Communication to the other person of any information known to the actuary that may affect the other person's work, and vice versa; and
- Study of any report by the other person and discussion of it with the other person, especially of any reservation in the report.

.08 The Canadian Institute of Actuaries encourages its members to use the work of an auditor in accordance with the Joint Policy Statement included in subsection 1520 of these standards of practice. The Joint Policy Statement also provides useful guidance if the actuary uses the work of a person other than an auditor.

.09 Although an actuary may take responsibility for the work of another actuary in accordance with this section, the actuary who performed the work also continues to be responsible for that work.

.10 In the case of use of another actuary's work, it may also be useful to

- Identify the differences between accepted actuarial practice in Canada and the practice that the other actuary followed if the other actuary worked outside of Canada; and
- Review the other actuary's working papers.

.11 The actuary need not report use of another person's work if the actuary takes responsibility for that work. To do so may imply a reservation.

**Use but not take responsibility**

.12 If the actuary uses but does not take responsibility for another person's work, the actuary would nevertheless examine the other person's work for evident shortcomings and would either report the results of such examination or avoid use of the work. For clarity, even though the other person may use a model in his or her work, the actuary is not considered to have used that model.

## 1520 Auditor's use of an actuary's work

.01 The actuary should cooperate with an auditor who wishes to use the actuary's work in accordance with the following Joint Policy Statement. [Effective February 1, 2018]

# Joint Policy Statement

concerning communications between auditors and actuaries

involved in the preparation of financial statements

This Joint Policy Statement, effective October 1, 2007, has been approved by the Actuarial Standards Board (Canada) and by the Auditing and Assurance Standards Board (Canada).

Purpose and application

1 The purpose of the Joint Policy Statement is to discuss:

a) communications between actuaries involved in the preparation of financial statements, and auditors, regarding their respective responsibilities;

b) how those actuaries and auditors would interact in carrying out their respective responsibilities; and

c) how their respective responsibilities may be disclosed to readers of financial statements.

2 This Statement applies when an auditor is engaged to carry out an audit of financial statements in accordance with generally accepted auditing standards where the financial statements prepared by management include amounts determined by or with the assistance of an actuary. This Statement also applies when an actuary considers the work of an auditor in connection with conducting the actuarial valuation to determine amounts to be included in the financial statements prepared by management. This statement does not apply to communications with an auditor's actuary or an external review actuary.

3 The financial statements of a pension plan or post-employment benefits plan and of the sponsor of such plans, and the financial statements of an insurance enterprise, are the best examples of when this Statement applies.

Definitions

4 For the purposes of this Statement:

a) "actuary involved in the preparation of financial statements" means an actuary, either an employee of the company or an independent consultant, who determines and reports on amounts to be included in the financial statements prepared by management.

b) "applicable professional standards" means:

i) when the responding professional is an actuary, the Standards of Practice and the Rules of Professional Conduct of the Canadian Institute of Actuaries; and

ii) when the responding professional is the auditor, the Canadian Auditing Standards in the CICA Handbook-Assurance and the relevant independence and other ethical requirements set out in the rules of professional conduct/code of ethics applicable to the practice of public accounting issued by various professional accounting bodies.

c) "auditor" means an auditor who has been appointed to perform an audit and report on financial statements or to perform specified procedures on data;

d) "auditor's actuary" means an appropriately qualified actuary who assists the auditor in assessing risk and performing further audit procedures to respond to assessed risk;

e) "data" includes particulars of:

i) invested assets of a pension plan or post-employment benefits plan or an insurance enterprise,

ii) membership of a pension plan or post-employment benefits plan,

iii) policies of and claims against an insurance enterprise, and

iv) reinsurance of an insurance enterprise;

f) "enquiring professional" means the actuary or the auditor, as the case may be, who is considering the work of the other;

g) "external review actuary" means an actuary who reviews the work of another actuary at the request of a regulator and provides an opinion to the regulator as to whether the work meets applicable professional standards and accepted actuarial practice;

h) "insurance enterprise" includes the following enterprises, including companies, branches, fraternal benefit societies and other forms of organizations:

i) life insurance enterprises;

ii) property and casualty insurance enterprises;

iii) reinsurance enterprises; and

iv) workers' compensation enterprises.

i) "management" refers to any person(s) having authority and responsibility for planning, directing and controlling the activities of an enterprise;

j) "responding professional" means the actuary or the auditor, as the case may be, whose work is being considered by the other.

Responsibilities with respect to financial statements

5 The financial statements are the responsibility of management. The representations contained in the financial statements may include amounts determined by an actuary. In determining those amounts, the actuary is responsible for assessing the sufficiency and reliability of the data used in the valuation. The actuary may consider the work of an auditor with respect to data integrity and controls. In such cases, the actuary involved in the preparation of the financial statements acts as the enquiring professional and the auditor acts as the responding professional.

6 The auditor, on the other hand, has a responsibility to express an opinion on the fairness with which the financial statements present the financial position, results of operations and cash flows in accordance with the applicable financial reporting framework, which will normally be generally accepted accounting principles. When the financial statements include amounts determined by an actuary, the auditor considers the work of the actuary as part of the audit evidence supporting the actuarial valuation. In such cases, the auditor acts as the enquiring professional and the actuary involved in the preparation of the financial statements acts as the responding professional.

Considering the responding professional's work

7 The enquiring professional may consider the work of the responding professional provided that the enquiring professional takes reasonable care to determine that there is a basis for such consideration. This is done by communicating with the responding professional to establish an understanding of the work to be carried out by each and by considering:

a) the responding professional's appointment to do the work;

b) whether the responding professional has followed the standards of his or her profession in carrying out the work; and

c) the appropriateness of the responding professional's findings and opinion.

Communication between the two professionals

8 Communication would be established between the auditor and the actuary involved in the preparation of the financial statements when planning their respective engagements, and further communication would take place as necessary throughout the engagement.

9 On a timely basis, each professional seeks from management the right to:

a) communicate with the other professional; and

b) when necessary disclose any relevant information to the other professional.

10 The enquiring professional would:

a) inform the responding professional of the intended consideration of his or her work in accordance with this Statement;

b) request confirmation from the responding professional that he or she has been engaged by the shareholders, policyholders, directors, or management to do the work that the enquiring professional intends to consider;

c) request confirmation from the responding professional that he or she is a professional in good standing;

d) request confirmation from the responding professional that he or she will carry out the work required in accordance with the applicable professional standards; and

e) make the responding professional aware of the enquiring professional's needs. This would include a discussion of:

i) the application of the concept of materiality to determine that the responding professional will be using a materiality level that is appropriate in relation to the enquiring professional’s materiality level in accordance with applicable professional standards;

ii) subsequent events, to determine that the responding professional understands how they are to be treated and that he or she will consider the effect of matters that come to his or her attention up to the date of his or her report;

iii) the timing of the work to be carried out by the responding professional and the date of his or her report; and

iv) any questions relating to the responding professional’s work.

11 The responding professional would provide a written response to the enquiring professional that would:

a) confirm the expectation that he or she is available to perform the work that the enquiring professional intends to consider;

b) confirm that he or she has been engaged by the shareholders, policyholders, directors, or management to do the work that the enquiring professional intends to consider;

c) confirm that he or she is a professional in good standing;

d) confirm that he or she is qualified to perform the work that the enquiring professional intends to consider (including having the certifications or designations, if any, required for particular areas of practice);

e) confirm that this work will be carried out in accordance with the applicable professional standards;

f) confirm awareness of the enquiring professional's intended consideration of his or her work; and

g) discuss any problems expected in meeting the needs of the enquiring professional on a timely basis.

The responding professional's qualifications, competence, and integrity

12 In the case of an auditor, prima facie evidence of professional qualification is membership in good standing in a professional accounting body. In the case of an actuary, prima facie evidence of professional qualification is fellowship in good standing in the Canadian Institute of Actuaries.

13 When the responding professional is not well known to the enquiring professional, the enquiring professional may obtain assurance as to the responding professional's reputation for competence and integrity by consulting with others who are familiar with the responding professional's work.

The responding professional's findings

14 The responding professional's written response to the enquiring professional after completion of the work would:

a) identify the purpose of the work;

b) identify the financial statements or data to which it relates;

c) identify the responding professional's relationship to the entity to which the financial statements or data pertain;

d) confirm awareness that the enquiring professional intends to consider the work in accordance with this Statement; and

e) when appropriate, include a copy of the report provided to the party who employed or engaged the responding professional that sets out the findings and, when applicable, opinions of the responding professional, including a representation that the work was performed in accordance with the applicable professional standards.

15 When the enquiring professional has a question about an aspect of the responding professional's work, the question would be raised with the responding professional who would provide a reasonable explanation about that aspect of his or her work. This does not, however, limit the right of the enquiring professional to any information or explanation that may be required in the performance of his or her duties in accordance with the applicable professional standards.

Disclosure of respective responsibilities to the readers of financial statements

16 When required by law or regulation, a description of the respective responsibilities of the auditor and of the actuary involved in the preparation of the financial statements would accompany the financial statements.

## 1530 Review or repeat of another actuary's work

.00 The standards in this subsection 1530 apply to a review engagement that is at the instigation of a user. They do not apply to quality control in the first actuary's firm or employer, even if the reviewer is external to the first actuary's firm or employer. The standards for a review engagement also apply, mutatis mutandis, to a repeat engagement.

.01 In this subsection 1530,

- "first actuary" means an actuary whose work is reviewed or repeated,
- "review engagement" means an engagement to review the first actuary's work,
- "reviewer" means the actuary engaged to review or repeat the first actuary's work, and
- "repeat engagement" means an engagement to repeat all or part of the first actuary's work.

.02 Repealed

.03 If the terms of the first actuary's engagement so permit, then the first actuary should cooperate with the reviewer. [Effective February 1, 2018]

.04 If the terms of the review engagement so permit, then the reviewer should, as soon as practical, discuss the review with the first actuary (unless the reviewer's agreement with the first actuary's work makes such discussion superfluous), and should attempt to resolve any difference between them. The reviewer should report the result of such discussion. [Effective February 1, 2018]

.05 If the reviewer reports disagreement with the first actuary's work but that work is within the range of accepted actuarial practice, then the reviewer should so report. [Effective February 1, 2018]

.06 If a limitation in time, information, data, or resources constrained the quality of the first actuary's work, then the reviewer should so report. [Effective February 1, 2018]

.07 If discussion between the two actuaries results in improvement to the first actuary's work or, in the case of periodic reporting, to the work expected for the subsequent report, then the reviewer should so report. [[Effective February 1, 2018]

.08 If the first actuary's work is not within the range of accepted actuarial practice, then the reviewer should so report. [Effective February 1, 2018]

.09 Repealed

**Selection of reviewer**

.10 The reviewer may be selected by a user of the first actuary's work or by the first actuary. The latter would not be appropriate if it gives rise to a potential conflict of interest (e.g., where the interests of the user and the first actuary's client or employer are opposed), but may otherwise be appropriate if it serves to

- facilitate compliance with this subsection 1530; and
- help assure selection of a qualified reviewer.

.11 In selecting a reviewer, the first actuary would take into consideration the user's objective for the review and would consult with the user as appropriate.

.12 If an actuary is qualified to perform the work of the first actuary, then that is prima facie evidence that the actuary is qualified to be the reviewer.

.13 The perceived objectivity of the reviewer is enhanced if the reviewer is independent of the first actuary.

**Timing of the review**

.14 The review may take place prior to the release of the first actuary's report ("pre-release review") or after such release ("post-release review"). A pre-release review provides the opportunity for the reviewer to suggest improvement to the work. A post-release review allows such improvement to be implemented only in future work and in some cases might require a withdrawal of the report and revision to the work.

.15 Repealed

**Difference between the two actuaries**

.16 If the reviewer identifies findings for a difference that is material, the reviewer would so report, along with an explanation of the reason for the difference.

.17 If the reviewer identifies findings for a difference that is not material, the reviewer would avoid reporting such a difference if it would lead to an unnecessary dispute with the first actuary. If the reviewer has access to different data, information, or resources, or has different time constraints than the first actuary had at the time of initial preparation of the report, then the reviewer would so report.

.18 If the reviewer believes that access to different data, information or resources would serve to reduce uncertainty in the interpretation of the work, then the reviewer would so report.

.19 Repealed

.20 Repealed

**Appropriate review engagement**

.21 The reviewer would consider the appropriateness of a review engagement that precludes discussion with the first actuary, especially if the first actuary will not be apprised that the review is to take place. Nevertheless, such an engagement may be an appropriate engagement, where, for example

- the interests of the first actuary's client or employer and the reviewer's client or employer are opposed, especially so in the case of actuarial evidence work involving litigation or mediation.
- the reviewer's client or employer is a judicial, legal or regulatory authority who is investigating the first actuary's conduct or the conduct of the first actuary's client or employer.
- the review is merely preliminary to a further review in which timely open discussion between the two actuaries will be possible.

.21.1 An engagement that limits or delays discussion between the two actuaries may be an appropriate engagement if the reviewer's client or employer wants to ensure that the two reports are independent of each other.

.22 In the case of actuarial evidence work involving litigation or mediation, the reviewer may be asked to report, without discussion with the first actuary,

- results based on assumptions which differ from those in the first actuary's report, or
- alternatives to the first actuary's reported results that are within the range of accepted actuarial practice.

Such an engagement would be an appropriate review engagement.

.23 Repealed

**Repeat engagement**

.24 A repeat engagement would be an appropriate engagement if its purpose is to identify or reduce uncertainty in the interpretation of the first actuary's work.

.25 If the second actuary knows or suspects that the engagement is a repeat engagement, then he or she would take into account the possibility that the client or employer is "opinion shopping" when determining if it is an appropriate engagement. Such an engagement may not be an appropriate engagement.

# 1600 Assumptions and Methods

## 1610 Methods

.01 The actuary should select a method that takes account of the circumstances affecting the work. [Effective February 1, 2018]

.02 The basis for calculating actuarial estimates is comprised of a method and one or more assumptions. Methods represent the underlying manner in which actuarial calculations are undertaken. Methods differ from one area of actuarial practice to another and have differed over time.

.03 In selecting an appropriate method, the actuary would consider whether any method is mandated by law, by practice-specific standards or by the terms of the engagement.

## 1620 Assumptions

.01 The actuary should identify and select each assumption that is needed for the work, except for those that are prescribed, that are mandated by law or that are stipulated by the terms of the engagement. [Effective February 1, 2018]

.02 The actuary should select an appropriate model or data assumption for a matter as the best estimate assumption relating to that matter, modified, if appropriate, to make provision for adverse deviations. In selecting an assumption, the actuary should take account of the circumstances affecting the work, past experience data, the relationship of past to expected future experience, anti-selection, and the relationship among matters. [Effective February 1, 2018]

.03 The appropriate assumption for a matter, other than a model or data assumption, should be continuation of the status quo, unless there is none or unless there is a reasonable expectation that it will change, and the actuary so reports. [Effective February 1, 2018]

.04 Throughout the standards, the word "calculation" appears, but not as a defined term. It can imply a mathematical operation as simple as adding two numbers or as complex as a scenario of financial condition testing. "Calculation" does not necessarily imply that a model is used. The word "calculation", when used in the context of a model, emphasizes the result of a model run and to a lesser extent model specification and model implementation.

.05 It may be useful, under the terms of the engagement, to report the result of two assumptions without opining on their relative appropriateness and to recommend that each user select that which meets his or her needs.

**Model assumptions**

.06 The model assumptions are quantitative assumptions in a model about

- Contingent events;
- Investment return and other economic matters, such as price and wage indices; and
- Numerical parameters of the environment, such as the income tax rate.

.07 There is a model assumption for each of the matters that the actuary's model takes into account. Those matters would be sufficiently comprehensive for the model reasonably to represent reality.

.08 A model, whether simple or complex, requires model assumptions. The model depends on the purpose of the work and the sensitivity of the model run to the various matters about which assumptions could be made. The actuary would strike a balance between the complexity needed for reasonable representation of reality and the simplicity needed for a practical calculation. If the model specification does not take into account a matter, the result is an implicit assumption about that matter, usually an assumption of zero probability or of zero rate. The actuary may compensate for an inappropriate implicit assumption regarding a matter that the model specification does not take into account by altering the explicit assumption regarding a matter that the model does take into account.

.09 For models with interrelated model assumptions, the actuary would consider the interaction between assumptions.

**Data assumptions**

.10 Data assumptions are the assumptions, if any, needed to relieve insufficiency or unreliability in the data.

.11 The available data may be not sufficient or not reliable. For example, files of pension plan members may lack the date of birth of the members' spouses. Based on sampling, or on comparison with comparable data, it may be appropriate to assume a relationship between spouse and member ages; for example, that a male spouse's date of birth is three years before the member's, and that a female spouse's date of birth is three years after the member's.

**Assumptions other than model and data assumptions**

.12 The assumptions other than model and data assumptions are the assumptions about the legal, economic, demographic, and social environment upon which the model and data assumptions depend.

.13 Such other assumptions are usually qualitative, dealing with the environment; for example,

- Legislation, like the Income Tax Act (Canada);
- Student education;
- The medical care system;
- Government social security systems; and
- International treaties.

.14 Those assumptions are needed to the extent that the model assumptions and, in some cases, the data assumptions depend upon them. Such assumptions are numerous and it is not practical to identify all of them.

.15 Continuation of the status quo is usually the appropriate assumption for other than model and data assumptions; for example, an assumption that the fund of a registered pension plan continues not to be taxed or that the capital markets remain more or less as they are. Users may infer that assumption except where the actuary reports otherwise. The actuary would report an assumption

- That is different from continuation of the status quo; and
- Regarding a matter for which there is no status quo, for example, a student's assumed occupation after completion of education.

**Acceptable range**

.16 There is a reasonable range of assumptions that may be selected by an actuary for particular work and that might produce materially different results. Sometimes, it is desirable that actuaries produce results within a relatively narrow range, in which case the practice-specific standards may prescribe certain methods and/or assumptions to achieve that purpose.

**Circumstances affecting the work**

.17 Knowledge of the circumstances affecting the work may require consultation with the persons responsible for the functions that affect experience. For example, if the calculation is to value the assets or liabilities of a benefits plan, the actuary would consult the persons responsible for investments, administration, and plan provisions. If the calculation is to value the policy liabilities of an insurer, the actuary would consult the officers responsible for investments, underwriting, claims, marketing, product design, policy dividends, and policy servicing.

.18 An assumption about a matter would take account of the circumstances affecting the work if those circumstances affect that matter. The circumstances affecting the work are relevant for experience in most matters other than economic matters.

**Past experience data**

.19 The available and pertinent past experience data are helpful in the selection of assumptions.

.20 Other things being the same, pertinent past experience data are data

- Relating to the case itself rather than to similar cases;
- Relating to the recent past rather than to the distant past;
- That are homogeneous rather than heterogeneous; and
- That are statistically credible.

These criteria may conflict with each other.

**Expected future experience vs. past experience**

.21 To extrapolate pertinent past experience and its trend to the near future is often, but not necessarily, appropriate.

.22 The appropriateness of the extrapolation depends on the matter assumed. For example, pertinent past mortality experience is a better indicator of the outlook than is pertinent past investment return experience.

.23 An extrapolation would take account of a change that affects the outlook. For example,

- Adoption of a subsidized early retirement option in a pension plan may affect retirement rates;
- A change in an issuer's case estimate practices may affect its claims development;
- An issuer's discontinuance of a line of business may affect its expense rates allocable to the remaining lines; and
- A change in judicial practice may affect the settlement of claims.

**Anti-selection**

.24 Each assumption would normally take account of potential anti-selection.

.25 One party in a relationship may have the right (or the administration of the relationship may give the privilege) to exercise certain options. That party may be, for example, a policyholder, a benefits plan's member, a borrower, a lender, or a shareholder.

.26 Examples are the right or privilege of a

- Pension plan member to select his or her retirement date when the pensions at various retirement ages are not actuarially equivalent;
- Policyholder to renew term life insurance at its expiry for a stipulated premium;
- Mortgagor to prepay principal, or an issuer to call a bond or redeem a preferred share; and
- Shareholder to retract a share.

.27 When considering a single relationship, it is reasonable to expect that party to exercise those options to the detriment of the other party in the relationship if it is to the first party's advantage to do so. However, where a number of such relationships are concerned, such as a portfolio of policyholders or members of a benefit plan, it may not be reasonable to assume that every one of these would exercise such an option in that manner.

.28 The extent of anti-selection depends on

- The size of the advantage from each exercise of the option (for example, anti-selection is dampened if the advantage to each policyholder is small even when the aggregate potential detriment to an issuer is large);
- The concomitance of exercise of the option (for example, election of a favourable early retirement pension may force the plan member into unwanted unemployment, or a policyholder (who is also the life insured) in ill health may be unable to afford to continue an insurance policy with a low premium);
- The policyholder's or plan member's difficulty in making the required judgment (for example, everyone knows his or her age, but a person may be unable to gauge the effect of ill health on longevity); and
- The sophistication of the policyholder, plan member, borrower, lender, or shareholder.

**Independently reasonable and appropriate in the aggregate**

.29 The assumptions that the actuary selects or for which the actuary takes responsibility, other than alternative assumptions selected for the purpose of sensitivity testing, would be independently reasonable and appropriate in the aggregate.

.30 The actuary would select independently reasonable assumptions. The following is an example:

- For a typical defined benefit pension plan valuation, the actuary would adopt an explicit investment assumption, as well as an explicit expense assumption rather than using implicit assumptions incorporated within a net discount rate. However, for a small defined benefit pension plan, the actuary may choose to use approximations for the investment expenses.

.31 The actuary would avoid the use of independently reasonable assumptions that are inconsistent or biased in the same direction, either of which might result in the assumptions not being reasonable in the aggregate. If an assumption is prescribed, is mandated by law or is stipulated by the terms of the engagement, it would not be appropriate to compensate for this prescription or stipulation by modifying other assumptions. The remaining assumptions would be reasonable in the aggregate and to the extent possible be independently reasonable.

.32 The use of independently reasonable assumptions implies that each assumption is explicitly defined. However, there would be no requirement to use explicit assumptions in the model specification, as long as the result of using that model does not produce a material error. For example, for pension valuations, use of a discount rate net of expenses may produce a value very close to the value obtained by using explicit assumptions. In this case, the actuary would disclose both the gross investment rate assumption and the expense assumption.

**Stipulated or mandated assumptions**

.33 Use of an assumption stipulated by the terms of the engagement is use of the work of another person.

.34 If the assumption is mandated by law and an amendment to the law is virtually definitive, it may be useful to report a result that reflects the amendment.

**Discount rate**

.35 The use of a discount rate is inherent in the actuarial present value method. The discount rate may be constant or it may vary over time. In selecting the best estimate assumption for the discount rate, the actuary, consistent with the circumstances affecting the work, may either

- Take into account the expected investment returns of the assets that support the liabilities; or
- Reflect interest rates on relevant fixed income reference securities.

.36 In selecting the best estimate assumption for the discount rate, the actuary, consistent with the circumstances affecting the work, may assume that the yields on fixed income investments at future dates, either

- Remain at levels applicable at the calculation date; or
- Revert in the long term to expected levels.

## 1630 Provision for adverse deviations

.01 The actuary should include a provision for adverse deviations in calculations only to the extent required by the terms of the actuary's engagement or as mandated by law or as prescribed by practice-specific standards. [Effective February 1, 2018]

## 1640 Comparison of current and prior assumptions

.01 Unless the actuary reports the inconsistency, the assumptions for a calculation for a periodic report should be consistent with those of the prior calculation. [Effective February 1, 2018]

.02 The definition of consistency for the purpose of this recommendation varies among practice areas. For example,

- For advice on funding a pension plan, the assumption at a calculation date is consistent with the corresponding assumption at the prior calculation date if the two are numerically the same; and
- For valuation of insurance contract liabilities for financial reporting, an assumption at a calculation date is consistent with the corresponding assumption at the prior calculation date if the two assumptions
  - Each reflect the conditions and outlook at their respective calculation dates consistent with the circumstances affecting the work in the case of a best estimate assumption;

- Each reflect the risks at their respective calculation dates consistent with the circumstances affecting the work in the case of a margin for adverse deviations; and
- Are located at the same point within the range of accepted actuarial practice.

.03 If the assumptions are not so consistent, the actuary would report the inconsistency. If practical, useful and appropriate under the terms of the engagement, the report would quantify the effect of the inconsistency.

# 1700 Reporting

## 1710 Reporting: external user report

.01 In an external user report, the actuary should

- Identify the client or employer;
- Describe the work, its purpose, and its users;
- Say that use of the report may not be suitable for another purpose;
- Say whether or not the work is in accordance with accepted actuarial practice in Canada and, if not, disclose the deviation from that practice;
- If useful, disclose any unusual application of accepted actuarial practice;
- If the report is supported by the use of a model, disclose limitations in the model relevant to the intended purpose;
- Disclose any aspect of the work for which the actuary does not take responsibility;
- Describe each assumption used for the work that is material to the results of the work, including the extent of any margin for adverse deviations included with respect to each such assumption;
- Provide the rationale for each such assumption that is material to the results of the work;
- For matters requiring an assumption other than a model or data assumption, disclose any assumption that is different from assumption of continuance of the status quo and, if practical, useful, and appropriate under the terms of the engagement, disclose the effect of alternative assumptions;
- Describe the methods used for the work;
- In the case of a periodic report, disclose any inconsistency between the assumptions and methods of the current and prior reports and the rationale for such inconsistency;
- Describe any subsequent event that is not taken into account in the work;
- Disclose any reservation;
- Express an opinion on the assumptions and methods used for the work;
- Express an opinion on the results of the work;
- Identify himself or herself and sign the report; and
- Date the report. [Effective February 1, 2018]

.02 Any description or disclosure may be in material referred to in the report and either accompany the report or plausibly be available to users. [Effective February 1, 2018]

.03 Subsequently, the actuary should respond to a user's request for explanation except if that is contrary to the terms of the engagement. [Effective February 1, 2018]

.04 Subsequently, the actuary should withdraw or amend the report if information comes to hand after the report date that invalidates the report. [Effective February 1, 2018]

.05 A duty of confidentiality in an appropriate engagement supersedes any of the foregoing portions of this recommendation with which it conflicts. [Effective February 1, 2018]

**Description and disclosure in general**

.06 The range of appropriate reports is relatively narrow for external user reports as compared to that for internal user reports. An external user report would be relatively formal and detailed when the actuary does not communicate directly with users or when the interests of an external user and of the actuary's client or employer are not the same.

.07 Appropriate description and disclosure in a report strike a balance between too little and too much. Too little disclosure deprives the user of needed information. Too much disclosure may exaggerate the importance of minor matters, imply a diminution of the actuary's responsibility for the work, or make the report hard to read.

.08 The appropriate criterion for description and disclosure is the question, "What qualitative and quantitative information best serves the user's understanding and decision-making?" The question, "What information does the user want?", is an insufficient criterion because the circumstances affecting the work may make the actuary aware of information needs of which the user is unaware.

.09 The actuary would consider and address the sensitivity of the results of the work to variations in key assumptions where practical, useful, and consistent with the terms of the engagement.

.10 Disclosure need not necessarily be in the report itself except if its importance so warrants or if it cannot be referenced in material available to users. Disclosure in a short report may place undue emphasis on the information disclosed.

.11 An unintended reservation misleads the user if it implies either that there was a deviation from accepted actuarial practice or that the actuary does not take full responsibility for the work. The following are examples.

- Approximation is a usual part of work. Even a moderately complex calculation may involve many approximations. Disclosure of an appropriate approximation may mislead the user by implying that the actuary's work falls short of accepted actuarial practice.
- Use of another person's work is also a usual part of work. If the actuary does not take responsibility for the used work, disclosure is appropriate. Disclosure if the actuary does take responsibility for the used work may mislead the user.
- Deviation from a particular recommendation or other guidance in the standards when the result of doing so is not material is also a usual part of work and its disclosure is undesirable.

**The work, its purpose, and its users**

.12 Description of the work usually includes the calculation date and the numerical result. If the work is mandated by law, citation of the law is useful.

.13 The amount of detail depends mainly on the needs of users. A separate report may be desirable for a particular user (usually a regulator) whose desire for detail significantly exceeds that of other users.

.14 Description of the purpose of the work and its users permits another person to assess its appropriateness to his or her needs and may thereby avoid unintended use of the work.

.15 The users comprise the addressee(s) of the report, and any others explicitly identified in the report. Where a report has more than one user, the actuary would have regard to the information of value to each user in determining appropriate disclosure.

**Accepted actuarial practice**

.16 If the work is in accordance with accepted actuarial practice, a simple statement to that effect is a powerful statement, and reassuring even to a user with a limited understanding of what constitutes accepted actuarial practice. If the work is not in accordance with accepted actuarial practice, a statement that it is, except for specified deviations, is a concise description.

.17 Any deviation from accepted actuarial practice would result from either conflict with law or conflict with the terms of an appropriate engagement.

.18 For work in Canada, the actuary would refer to "accepted actuarial practice for work in Canada", or use other language of equivalent meaning and clarity.

.19 For work outside of Canada, the actuary may choose to refer to

- "Accepted actuarial practice for work in [country]", if the guidance of a foreign jurisdiction has been applied to the work;
- "Internationally accepted actuarial practice", if the guidance of the International Actuarial Association has been applied to the work; or
- "Accepted actuarial practice for work in Canada", if Canadian guidance has been applied to the work because of the absence of applicable foreign guidance.

**Unusual application of accepted actuarial practice**

.20 The actuary would not usually report a deviation from a particular recommendation or other guidance in these standards as a result of an unusual or unforeseen situation.

.21 If, as is common, accepted actuarial practice for an aspect of the work encompasses a range, the actuary usually reports the work as being in accordance with accepted actuarial practice without drawing particular attention to his or her selection within the range. Disclosure of the selection, and of the reason for selecting it, is appropriate, however, if it is

- Mandated by law or specified by the terms of the actuary's engagement;
- Excluded from the accepted range by an exposure draft or by approved, but not yet effective, new standards;
- Inconsistent with the corresponding assumption of a prior periodic report;
- Dependent on a special permissive feature in the law for its acceptability; or
- Unusual or controversial.

**Limitation to actuary's responsibility**

.22 Any diminution of the actuary's responsibility for the work as a result of an engagement whose terms call for a deviation from accepted actuarial practice would be disclosed.

**Disclosure of assumptions**

.23 Where an assumption or method is mandated by law, the actuary would, if relevant, disclose that use of the report, based on the mandated assumption or method, may not be appropriate for purposes other than that for which the report was prepared.

**Subsequent event not taken into account in the work**

.24 An example of a subsequent event not taken into account in the work is a non-retroactive increase in the benefits of a pension plan for which the actuary is advising on funding. The actuary would describe the increase, report that it was not taken into account in the current advice on funding but that it will be taken into account in future advice. If useful, the actuary would quantify its effect, for example, by reporting the pro forma effect on the recommended funding if the benefit increase were effective immediately before the calculation date.

**Reservations**

.25 A report with reservation may be unavoidable in certain circumstances, such as the following:

- The actuary was obliged to use the work of another person and has doubts about the appropriateness of so doing.
- The actuary was unable to arrive at a conclusion as to the sufficiency and reliability of the data.
- There was an undue limitation to the scope of the actuary's work. For example, the time, information, or resources contemplated by the terms of the engagement did not materialize.
- There is an unresolved conflict of interest.

.26 The actuary would report any remedy, underway or expected, to the problem causing the reservation.

.27 A serious reservation may call for consulting with another actuary or obtaining legal advice.

.28 Barring explicit disclosure to the contrary in the report, the user is entitled to assume that

- The work is in accordance with accepted actuarial practice and no reservation is required;
- The data are sufficient and reliable; and
- If a periodic report, the method is the same as that in the prior report and the assumptions are consistent with those in the prior report.

**Use of models**

.29 An external user report would rarely refer directly to a model. Disclosures related to a model are typically found in supporting documents. The report would contain a reference to a model if, for example, the actuary is required to do so by the engagement, the model has limitations relevant to the purpose of the engagement, or the actuary is unable to assess model risk.

.30 Explanation of the limitations of a model and the implications of those limitations would include descriptions of

- any relevant exclusions from the model, and
- simplifying assumptions made.

.31 If the actuary uses a model outside the domain of actuarial practice and is not able to verify the appropriateness of using such a model, the actuary would so report.

**Opinion**

.32 In giving an opinion on any matter in the report, the actuary would begin with "In my opinion..." which is a signal that the actuary is giving a formal, professional opinion.

.33 With respect to any assumption or method specified by the terms of the engagement, the actuary would

- If the actuary considers such assumption or method to fall within the range of accepted actuarial practice, opine that the assumption or method is appropriate;
- If the actuary considers such assumption or method to not fall within the range of accepted actuarial practice, report that the assumption or method is not in accordance with accepted actuarial practice and report that the assumption or method was specified by the terms of the engagement, as applicable;
- If the actuary is unable to easily determine whether the assumption or method falls within the range of accepted actuarial practice, report that the assumption or method may not be in accordance with accepted actuarial practice and report that the assumption or method was specified by the terms of the engagement, as applicable.

.34 It may be convenient to group the opinion statements in the external user report in a section with a heading such as Statement of Opinion that would be signed by the actuary.

**Identification**

.35 For work in Canada, the actuary would usually identify himself or herself simply as "Fellow, Canadian Institute of Actuaries" (or "FCIA" if users recognize the abbreviation), especially when Fellowship in the CIA is required or expected for the work.

**Report date**

.36 In reporting an opinion, the actuary would consider all available information up to the report date, including subsequent events if the report date is after the calculation date.

.37 The report date would usually be the date at which the actuary has substantially completed the work. The remaining effort may include peer review, typing and photocopying the report, and compilation of documentation.

.38 The date the actuary signs and delivers the report would be as soon thereafter as practical. If there is an unavoidably long delay, however, the actuary would consider any additional subsequent events that would result from a current report date.

.39 The actuary would issue the report within a reasonable time period with regard to the actuary's terms of engagement and the needs of the users of the report.

**Withdrawal or amendment of a report**

.40 After the report date, the actuary has no obligation to seek additional information that, if known at the report date, would have been reflected in the work, but, if additional information comes to hand, the actuary would consider if it affects the report. Additional information affects the report if it

- Reveals a data defect or a calculation error;
- Provides additional information about the entity that is the subject of the report as that entity was at the calculation date;
- Retroactively makes that entity different at the calculation date; or
- Makes that entity different after the calculation date and a purpose of the work was to report on the entity as it would be as a result of the information.

.41 Additional information may consist of both external information and internal discovery of an error in the work. Its classification is similar to the classification of subsequent events. That is, if the additional information results in the actuary determining that an event has occurred that would have to be taken into account in the data, assumptions, or methods for the work, it would affect the report. It does not affect the report if it makes the entity, which is the subject of the report, different after the calculation date and a purpose of the work is to report on the entity as it was at the calculation date; for example, if the additional information changes the outlook for the entity that would lead the actuary to select different assumptions at the next calculation date for a periodic report.

.42 If the additional information results in the actuary determining that an event has occurred that affects the report, the actuary would determine whether the event invalidates the report. If the actuary determines that the event does not invalidate the report, the actuary would consider whether to inform some or all of the users of the report about the event. If the actuary determines that the event invalidates the report, the actuary would withdraw or amend the report. If the actuary withdraws or amends a report, he or she would seek agreement with the client or employer on the notification to be given to users and on the preparation of an amended or replacement report in cases where there is no legal requirement to do so. Failing such agreement, the actuary would consider seeking legal advice on the discharge of his or her responsibilities, taking consideration of the fact that, to the extent practical and useful, all users should so be informed.

.43 The following examples are intended to assist actuaries in determining whether an event of which the actuary becomes aware after the report date may be worthy of disclosure to the users of the report or may require the report to be withdrawn or amended:

- If an event affects a report, but that report has been superseded by another report, typically no action would be taken with respect to the prior report;
- If an event materially affects the financial position, financial condition, or funded status of a pension plan, but does not materially affect the funding of the plan, it may be sufficient to disclose the event to the users of the report rather than withdraw or amend the report;
- If an event results in a situation where an assumption used in the work is obviously erroneous, but the assumption was reasonable at the report date, the actuary would typically not withdraw or amend the report, but would reflect the event in a subsequent report; and
- If an actuary has prepared a report that provides advice on the funding of a pension plan and, subsequent to the report date discovers an error in the report, and the funding recommendations contained in the report would change materially if the error were corrected, the actuary may determine that it is appropriate to withdraw or amend the report.

## 1720 Reporting: internal user report

.01 In the case of an internal user report, the actuary may appropriately abbreviate the recommendation for external user reports. [Effective February 1, 2018]

.02 The range of appropriate reports is wider for internal user reports than for external user reports. At one end of the range, a formal internal user report may differ little from an external user report. At the other end of the range, an informal, abbreviated, even oral, report may suffice for a representative of the actuary's employer or client with whom the actuary communicates frequently and who is well-versed in the subject of the report. To abbreviate the standards for an internal user report is efficient for both the actuary and the user provided that complete and clear communication is not thereby compromised.

## 1730 Reporting: oral report

.01 Oral reporting, especially to an internal user, is both useful and inevitable in some situations. The disadvantage of oral reporting is that the actuary and user may have differing recollections of what was reported. It is therefore good practice to confirm an oral report in writing, especially when there is an external user, or to record it in documentation.

.02 Except for signature and report date, the standards are the same for both oral and written reports.

## 1740 Summary report

.01 Where required by practice-specific standards, the actuary should prepare a summary report. [Effective February 1, 2018]

.02 The practice-specific standards specify the language to be used in the summary report.

.03 The purpose of the summary report is to simplify the actuary's communication with users and may be incorporated in a report prepared by the actuary's employer or client; for example, the financial statements of an insurer, a pension plan or a public personal injury compensation plan. Such a report does not constitute an external user report.

# 2000—Insurance

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# 2100 Insurance Contract Valuation: All Insurance

## 2110 Scope

.01 Part 1000 applies to work within the scope of Part 2000.

.02 Repealed

.03 Sections 2200 and 2300 apply to the valuation of insurance contracts and other obligations in accordance with IFRS 17, even where the reporting entity is not an insurer.

- Section 2200 reflects Canadian-specific considerations. It includes specific exclusions from Part 1000, a glossary of terms applicable to IFRS 17, and valuation and reporting requirements.
- Section 2300 reflects International Standard of Actuarial Practice 4 (ISAP 4), developed by the International Actuarial Association. It provides guidance to actuaries when performing actuarial services in connection with IFRS 17.

.04 Where the valuation of insurance contracts and other obligations is not in accordance with IFRS 17, Sections 2200 and 2300 do not apply to the valuation and the valuation would be in accordance with any applicable accounting standards if the valuation is to be used for financial reporting, or the terms of the actuary's engagement or as mandated by law or as prescribed by practice-specific standards.

.05 Section 2400 applies to actuaries performing the role of appointed actuary as defined in subsection 2420.

.06 Section 2500 applies to the appointed actuary of an insurer when preparing a report on an insurer's financial condition as defined in subsection 2510.

.07 Section 2600 applies to property and casualty ratemaking as defined in subsection 2610.

.08 Section 2700 applies to policyholder dividend determination as defined in subsection 2710.

.09 Section 2800 applies to public personal injury compensation plans for both the valuation of insurance contracts and other obligations for financial reporting in accordance with IFRS 17 and the valuation of benefit liabilities for funding purposes.

# 2200 Insurance Contract Valuation: Canadian Considerations

## 2210 General

.01 IFRS 17 Insurance Contracts ("IFRS 17") establishes principles for the recognition, measurement, presentation and disclosure of insurance contracts. The actuary should be familiar with IFRS 17 and apply the requirements in the valuation of insurance contracts and other obligations where such valuation is to be in accordance with IFRS 17. [Effective January 1, 2023]

.02 The Standards of Practice provide guidance to actuaries when performing actuarial services in connection with IFRS 17. They are intended to supplement and not replace or restate the requirements of IFRS 17.

.03 Notwithstanding the general applicability of Part 1000, paragraphs 1620.35 and 1620.36 on Discount Rate do not apply to the valuation of insurance contracts and other obligations where such valuation is to be in accordance with IFRS 17.

.04 The IFRS 17 risk adjustment for non-financial risk is not considered to be a provision for adverse deviations as defined in paragraph 1120.53.

.05 When the principal or another party sets or prescribes an assumption or methodology used by the actuary in performing actuarial services in connection with IFRS 17, it is to be treated as the actuary's use of another person's work as described in subsection 1510. The actuary would not 'take responsibility' for such work:

- If the assumption or methodology set or prescribed by the principal or another party conflicts with what would be appropriate for the purpose of the actuarial services; or
- The actuary is unable to judge the appropriateness of the assumption or methodology set or prescribed by the principal or another party without performing a substantial amount of additional work beyond the scope of the assignment, or the actuary is not qualified to judge the appropriateness.

## 2220 Definitions

.01 Sections 2100, 2200, 2300, and 2800 use various terms whose specific meanings are defined in ISAP 4. These terms are highlighted in the text with a dashed underscore and in blue (e.g., Accounting Policies). For the purpose of these sections, these terms have the meaning given in this subsection and have their ordinary meaning otherwise.

.02 Sections 2100, 2200, 2300, and 2800 also use key terms found in IFRS 17, in which case they have the meaning as used in IFRS 17. These terms are highlighted in the text with a double underscore and in green (e.g., insurance contract).

.03 **Accounting Policies –** As defined by the International Accounting Standards Board® (the Board) in paragraph 5 of IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors,* "the specific principles, bases, conventions, rules and practices applied by an [reporting] entity in preparing and presenting financial statements."

.04 **Actuarial Services –** Services based upon actuarial considerations provided to intended users that may include the rendering of advice, recommendations, findings, or opinions.

.05 **Communication –** Any statement (including oral statements) issued or made by an actuary with respect to actuarial services.

.06 **Data –** Facts often collected from records, experience, or observations. Data are usually quantitative but may be qualitative. Examples of data include membership or policyholder details, claims details, asset and investment details, operating expenses, benefit definitions, and policy terms and conditions. Assumptions are not data, but data are commonly used in the development of actuarial assumptions.

.07 **General Measurement Approach –** The basis for measuring insurance contracts set out in IFRS 17, except where IFRS 17 permits a simplification (in the case of the premium allocation approach) or is modified (in the case of the variable fee approach).

.08 **IFRS 17 –** International Financial Reporting Standard 17 – Insurance Contracts, including any interpretations from the International Financial Reporting Interpretations Committee thereon, as issued through 16 August 2019.

.09 **International Financial Reporting Standards (IFRSs) –** As defined by the IASB in paragraph 7 of IAS 1 Presentation of Financial Statements, as amended in June 2011, by Presentation of Items of Other Comprehensive Income (Amendments to IAS 1): "Standards and Interpretations issued by the International Accounting Standards Board (IASB). They comprise:

a. International Financial Reporting Standards;

b. International Accounting Standards;

c. [International Financial Reporting Interpretations Committee] IFRIC® Interpretations; and

d. [The former Standing Interpretations Committee] SIC Interpretations."

.10 **Intended User –** Any legal or natural person (usually including the principal) whom the actuary intends to use the output of the actuarial services at the time the actuary performs those services.

.11 **Law –** Applicable acts, statutes, regulations, or any other binding authority (such as accounting standards and any regulatory guidance that is effectively binding).

.12 **Measurement Date –** The date as of which the value of an asset or liability is presented, whether or not the actual calculations have been made as of a different date and rolled forward or back to the measurement date. This has the same meaning as calculation date.

.13 **Opinions –** An opinion expressed by an actuary and intended by that actuary to be relied upon by the intended users.

.14 **Principal –** The party who engages the provider of actuarial services. The principal will usually be the client or the employer of the actuary.

.15 **Variable Fee Approach –** The measurement approach that is a modification of the general measurement approach for the valuation of insurance contracts with direct participation features as set out in IFRS 17.

## 2230 Reporting

.01 The actuary's report, which is a summary report as described in subsection 1740, should

- conform to relevant Canadian federal and provincial legislation that require the actuary to value the policy liabilities, not only the insurance contract liabilities;
- describe the valuation and presentation of policy liabilities for the insurer's financial statements prepared in accordance with International Financial Reporting Standards (IFRS);
- include the actuary's opinion on the appropriateness of those policy liabilities and on the fairness of their presentation; and
- describe the actuary's role in the preparation of the insurer's financial statements if that role is not described in those statements or their accompanying management discussion and analysis. [Effective January 1, 2023]

.02 If the actuary can report without reservation, then the actuary's report should conform to the standard reporting language, consisting of

- A scope paragraph, which describes the actuary's work; and
- An opinion paragraph, which gives the actuary's favourable opinion on the valuation and its presentation;

otherwise the actuary should modify the standard reporting language to report with reservation. [Effective January 1, 2023]

**Presentation of policy liabilities in financial statements**

.03 The valuation of policy liabilities for use in IFRS financial statements requires valuation of items other than the total amount of policy liabilities. All items derived from the valuation of policy liabilities that are reported in the statement of financial position, statement of financial performance, statement of changes in equity, statement of cash flows, and the accompanying notes (disclosures) are part of the presentation of policy liabilities in the IFRS financial statements.

.04 Examples of such items derived from the valuation of policy liabilities are:

- The change in the liability for remaining coverage in the reporting period that is presented as insurance revenue in the statement of financial performance;
- The calculation and projection of coverage units used to allocate the release of the contractual service margin over current and future reporting periods;
- Identification of the components of the total carrying amount (present value of future cash flows, risk adjustment for non-financial risk, and contractual service margin) for each of:
    - portfolios of insurance contracts issued that are assets;
    - portfolios of insurance contracts issued that are liabilities;
    - portfolios of reinsurance contracts held that are assets; and
    - portfolios of reinsurance contracts held that are liabilities.
- Reconciliation of change in the contractual service margin or loss component.

**Description of the actuary's role**

.05 An insurer that reports financial statements under IFRS is responsible for the information reported. This means it is responsible for, amongst other things, identification, combination, aggregation, separation, recognition and derecognition of contracts, the choice of measurement approach and assumptions, the measurement calculations and the disclosures in the IFRS financial statements.

.06 However, where required by legislation, the actuary is responsible for performing a valuation of policy liabilities and reporting to policyholders and shareholders on that valuation and its presentation in the financial statements. Accordingly, the actuary's summary report would include a description of the role of the actuary in the preparation of the insurer's financial statements if the financial statements or their accompanying management discussion and analysis do not provide that description.

.07 Here is an illustrative description.

"The Appointed Actuary is

> appointed by the [Board of Directors] of [the Company];
>
> responsible for ensuring that the valuation of policy liabilities is in accordance with accepted actuarial practice in Canada, applicable legislation, and associated regulations and directives; and
>
> required to provide an opinion on the appropriateness of the policy liabilities reported in the financial statements and the fairness of their presentation."

The wording of the illustrative description conforms to relevant Canadian federal and provincial legislation that require the actuary to value the policy liabilities, not only the insurance contract liabilities.

.08 It may also be useful for the financial statements or their accompanying management discussion and analysis to include a description of the formal responsibilities of the actuary beyond the role in the preparation of the financial statements, including for example the annual financial condition testing and report to the directors of the insurer.

**Standard reporting language**

.09 Here is the standard reporting language in the usual situation where the financial statements or their accompanying management discussion and analysis include a description of the role of the actuary in the preparation of the financial statements. Otherwise, that description would be inserted between the two paragraphs in this report.

**Appointed Actuary's Report**

To the policyholders [and shareholders] of [the ABC Insurance Company]:

I have valued the policy liabilities of [the Company] for its [consolidated] financial statements prepared in accordance with International Financial Reporting Standards for the year ended [31 December xxxx].

In my opinion, the amount of policy liabilities is appropriate for this purpose. The valuation conforms to accepted actuarial practice in Canada and the [consolidated] financial statements fairly present the results of the valuation.

[Montréal, Québec] [Mary F. Roe]
[Report date] Fellow, Canadian Institute of Actuaries

.10 The language in square brackets is variable and other language may be adjusted to conform to interim financial statements and to the terminology and presentation in the financial statements.

.11 An auditor's report usually accompanies the financial statements. Uniformity of common features in the two reports will avoid confusion to readers of the financial statements. Those common features include

- Addressees: Usually, the actuary addresses the report to the policyholders of a mutual insurer and to both the participating policyholders and shareholders of a stock insurer.
- Years referenced: Usually, the actuary's report refers only to the current year, even though financial statements usually present results for both the current and prior years.
- Report date: If the two reports have the same date, then they would take account of the same subsequent events.

**Communication with the auditor**

.12 Communication with the auditor is desirable at various stages of the actuary's work. Examples of situations where communication with the auditor is desirable are:

- Use of the work of the other professional by both actuary and auditor;
- The drafting of common features in the auditor's report and actuary's report;
- The drafting of a report with reservation;
- The presentation of the insurance contract liabilities and other policy liabilities, including the presentation of other items in the financial statements that are valued by the actuary; and
- The treatment of subsequent events.

**Disclosure of unusual situations**

.13 The items that the actuary values for the financial statements may be misleading if the financial statements do not present them fairly. The actuary's report signals to the reader of the financial statements that there is, or is not, fair presentation.

.14 In an unusual situation, fair presentation may require explanation of an item that the actuary values for the financial statements. Usually, the notes to the financial statements would provide that explanation, including, where appropriate, disclosure of the situation's effect on the financial statements. In the absence of such explanation in the notes, the actuary would provide it by a reservation in reporting that would include the explanation.

.15 The question, "Will explanation enhance the user's understanding of the insurer's financial statements?" may help the actuary to identify such a situation. Examples of unusual situations where explanation may help the user's understanding are:

- Capital appropriated or repatriated on the actuary's advice;
- Off-balance-sheet obligations (e.g., contingent policy liabilities in connection with market conduct);
- Restatement of items for preceding financial reporting periods;
- Inconsistency among financial reporting periods;
- The impracticality of restating any items that are reported in current period financial statements and that were reported inconsistently in preceding period financial statements;
- An unusual relationship between the items in current period financial statements and the expected corresponding items in future period financial statements;
- A change in a methodology used in the valuation that does not have an effect in the current financial reporting period but that is expected to have an effect in future financial reporting periods;
- A difference between the insurer's present practices (e.g., policy for setting dividend scales) and those which the actuary assumed in valuing the policy liabilities; and
- A subsequent event.

**Consistency across financial reporting periods**

.16 Financial statements usually present results for one or more preceding financial reporting periods in comparison to those for the current period. Meaningful comparability requires the financial statement items for the various periods to be consistent, which can be achieved by the restatement of preceding period items that were previously reported on a basis which was inconsistent with that for the current period. A less desirable alternative to restatement is disclosure of the inconsistency.

.17 A change in a methodology used in the valuation might create an inconsistency. A change in the assumptions for valuation reflecting a change in the expected outlook does not constitute an inconsistency although, if its effect is material, then fair presentation would require its disclosure.

.18 A change in assumptions that results from the application of new standards might create an inconsistency.

**Reservations in reporting**

.19 The examples that follow are illustrative of situations where a reservation in reporting is required. Where "reference" appears in square brackets in suggested wording, a paragraph in the actuary's report would provide the additional explanation necessary for fair presentation.

**New appointment**

.20 A newly appointed actuary who uses but is unable to take responsibility for the predecessor actuary's work would modify the standard reporting language as follows:

> I have valued the policy liabilities of [the Company] for its [consolidated] financial statements prepared in accordance with International Financial Reporting Standards for the year ended [31 December xxxx].
>
> In performing this valuation I used the valuation of the policy liabilities at [31 December xxxx-1] which was performed by another actuary who expressed a favourable opinion without reservation as to their appropriateness and fair presentation.
>
> In my opinion, subject to the use of another actuary's work as noted above, the amount of policy liabilities is appropriate for the stated purpose. The valuation conforms to accepted actuarial practice in Canada and the [consolidated] financial statements fairly present the results of the valuation.

.21 If the actuary doubts the appropriateness of the predecessor actuary's work as a result of a review of it, then the actuary would consider a more serious reservation.

**Impracticality of restatement**

.22 The actuary would, if necessary and practical, restate the preceding year valuation to be consistent with the current year valuation. If it is not practical to restate the preceding year valuation, the actuary would modify the opinion paragraph in the standard reporting language.

.23 An example of an inconsistency that might require restatement is a change in the methodology chosen to measure the coverage units used to allocate and recognize the contractual service margin in profit or loss, in which case the opinion paragraph of the report might appear as follows:

> In my opinion, the valuation conforms to accepted actuarial practice in Canada and the amount of policy liabilities is appropriate for the stated purpose. As explained in [reference], [the methodology for XX] for the current year is inconsistent with that used in previous years. Except for that lack of consistency, in my opinion the [consolidated] financial statements fairly present the results of the valuation.

The reference would identify where to find additional information that explains the change in methodology and the impracticality of applying the new methodology retroactively and discloses the effect of the change on the financial statements.

**Takeover of insurer with insufficient records**

.24 If the insurer took over another insurer with records that did not provide sufficient and reliable data for the valuation, then the actuary would modify the standard reporting language as follows:

> I have valued the policy liabilities of [the Company] for its [consolidated] financial statements prepared in accordance with International Financial Reporting Standards for the year ended [31 December xxxx]. The valuation conforms to accepted actuarial practice in Canada, except as described in the following paragraph.
>
> During the year, [the Company] took possession of the assets, liabilities, and policies of [WWW Insurer], whose policy records are, in my opinion, unreliable. [The Company] is implementing but has not completed the necessary improvements. My valuation with respect to the policies taken over from [WWW Insurer] therefore involves an unusual degree of uncertainty. The associated policy liabilities comprise [N]% of [the Company's] total policy liabilities at [31 December xxxx].
>
> In my opinion, except for the reservation in the previous paragraph, the amount of policy liabilities is appropriate for the stated purpose and the [consolidated] financial statements fairly present the results of the valuation.

**Liabilities different than those calculated by the actuary**

.25 If the financial statements of an insurer report policy liabilities that are materially different from those calculated and reported by the actuary then the actuary would need to disclose the difference in the amounts and identify where to find an explanation for the difference. If possible, such explanation would include the important reasons for the difference.

.26 The actuary could report as follows:

> I have valued the policy liabilities of [the Company] for its [consolidated] financial statements prepared in accordance with International Financial Reporting Standards for the year ended [31 December xxxx]. My valuation conforms to accepted actuarial practice in Canada.
>
> In my valuation, the amount of the policy liabilities is $[X]. The corresponding amount in the [consolidated] financial statements is $[Y]. The sources of this difference are described in [reference].
>
> In my opinion, the amount of policy liabilities in the [consolidated] financial statements is not appropriate and as explained in [reference] the [consolidated] financial statements do not fairly present the results of my valuation.

**Change in assumption or methodology affecting disclosure items**

.27 If an item valued by the actuary is materially affected by a change in assumption or methodology that is not disclosed in the financial statements, the actuary would modify the opinion paragraph in the standard reporting language to disclose this situation.

.28 An example of such a change might be a change in the methodology for measuring the risk adjustment for non-financial risk that materially affects financial statement disclosures related to insurance contracts initially recognized in the year.

.29 In this case the opinion paragraph of the report could be changed as follows:

> In my opinion, the valuation conforms to accepted actuarial practice in Canada and the amount of policy liabilities is appropriate for the stated purpose. As explained in [reference], [the methodology for XX] was changed from that used for the previous year. Except for the absence of the disclosure of this change and its impact, in my opinion the [consolidated] financial statements fairly present the results of the valuation.

The additional information referenced in the report of the actuary would explain the change in methodology and disclose the effect of the change on financial statements.

**Examples not requiring reservation in reporting**

.30 When the actuary uses an assumption or methodology set by another party in performing the valuation of policy liabilities and the actuary is able to take responsibility for the work, the actuary would not modify the opinion paragraph in the standard reporting language.

Following are illustrative examples of such situations:

> In setting discount rates, the Chief Investment Officer (CIO) of the insurer selects different reference portfolios for two groups of insurance contracts with the same liquidity characteristics creating inconsistency which the actuary considers to be unnecessary. Both reference portfolios are reasonably representative of the liquidity characteristics as required by IFRS 17. The actuary has confidence in the CIO's qualifications, competence, integrity, and objectivity.
>
> The insurer's risk appetite framework clearly indicates that longevity risk is desirable (i.e., the insurer prices it cheaply). The actuary believes that the insurer should require more compensation than it does for taking on longevity risk, but the risk adjustment for non-financial risk reflects the insurer's requirements as required by IFRS 17.
>
> The Chief Financial Officer (CFO) of the insurer classifies some expenses "directly attributable" as defined under IFRS 17 that the actuary would consider not "directly attributable", which results in a material impact on some components of the valuation. The CFO understands the actuary's view and the impact on the financial statements of the difference in view. The actuary has confidence in the CFO's qualifications, competence, integrity, and objectivity, and acknowledges that the CFO's view is reasonable.

# 2300 Insurance Contract Valuation: International Actuarial Standards of Practice

## 2310 General

**Purpose**

.01 When performing actuarial services in connection with IFRS 17, actuaries should apply the requirements of IFRS 17 and this Section 2300. [Effective January 1, 2023]

.02 The purpose of this section is to increase intended users' confidence that

- Actuarial services are carried out professionally and with due care;
- The results are relevant to their needs, are presented clearly and understandably, and are complete; and
- The assumptions and methodology (including, but not limited to, models and modelling techniques) used are disclosed appropriately.

**Relationship to IFRSs**

.03 Section 2300 refers to the content of IFRS 17 and other IFRSs, including any interpretations from the International Financial Reporting Interpretations Committee (IFRIC) or its predecessor, the Standing Interpretations Committee, as issued through 16 August 2019. The guidance in this Section 2300 complements the guidance in IFRS 17, which is not repeated in this Section 2300.

## 2320 Appropriate Practices

### Relevant knowledge requirements

.01 The actuary would have or obtain sufficient knowledge and understanding of information necessary to perform the assignment, such as:

- IFRS 17, applicable sections of other relevant IFRSs (e.g., IFRS 13 when measuring Fair Value), the entity's accounting policies and the relevant processes that are applied in the preparation of IFRS financial statements;
- The business environment in which the entity operates, including the financial market(s) from which it obtains data;
- The entity's appetite for risks that have an impact on the measurement under IFRS 17;
- The entity's products and operations;
- The methodologies and assumptions used by the entity in other relevant contexts and the rationale for any differences;
- How laws affect the application of IFRS 17; and
- The relevant auditing standards.

### Materiality

.02 The actuary would understand the distinction between materiality with respect to the actuarial services, the preparation of IFRS financial statements and the auditing of those financial statements.

- When appropriate for the work, the actuary would seek guidance from the principal or the entity regarding materiality.
- In applying subsection 1240, with respect to the preparation of IFRS financial statements, the actuary's threshold of materiality with respect to the actuarial services would not be greater than the entity's threshold of materiality.
- In all following paragraphs of Section 2300, any use of 'material' or 'materiality' is with respect to the actuarial services carried out in accordance with this section.

### Proportionality

.03 The degree of refinement in specific assumptions or methods recommended by the actuary would be proportionate to their possible impact on the results of the actuarial services.

**Identification, combination, aggregation, separation, recognition, derecognition, and modification**

.04 The actuary would treat the processes of:

- Identification of insurance contracts;
- Combination of insurance contracts;
- Determination of the level of aggregation (refer to 2320.17);
- Separation of components from an insurance contract for treatment under a different standard;
- Separation of components of an insurance contract for different treatment under IFRS 17 (if and to the extent permitted);
- Recognition of groups of insurance contracts and derecognition of insurance contracts; and
- Treatment of insurance contract modifications

as work subject to paragraph 2210.05.

The actuary would disclose in the actuary's report changes in the above processes, including the rationale for and impact of the changes.

**Measurement approach**

.05 The actuary would treat the processes of selecting the appropriate measurement approach to be applied to each group of insurance contracts, whether it is the general measurement approach, the premium allocation approach (PAA), or the variable fee approach, as work subject to paragraph 2210.05.

The actuary would disclose in the actuary's report changes in the above processes, including the rationale for and impact of the changes.

**The General Measurement Approach**

.06 **General approach for selection of assumptions –** In applying Part 1000, when advising the principal or the entity on actuarial assumptions, the actuary would consider matters such as:

- Combining similar risks based on the nature of the insurance obligation, without being constrained by the actual grouping of insurance contracts that is used for measurement purposes;
- Whether assumptions developed in other contexts, for example pricing assumptions, may be inappropriate for IFRS 17 purposes;
- Links as necessary to ensure consistency between assumptions, (e.g., assumptions related to option exercise patterns would be linked to the economic scenarios);
- The potential asymmetrical distribution of the current estimates (e.g., assumptions to deal with extreme events like tail events or options and guarantees that are triggered by market conditions);
- The credibility of data when combining information from various sources or time periods; and
- Long term trends and seasonal variations, and other changes in the environment (e.g., applicable law, economic, demographic, technological and social).

.07 **Process for updating assumptions –** If the actuary considers it appropriate to change the process, including the methodology, used to update a recommended assumption, the actuary would discuss the change with the principal, including whether it would constitute a change in accounting policy or just a change in an accounting estimate as defined in the International Accounting Standard 8 (IAS 8) *Accounting Policies, Changes in Accounting Estimates and Errors*.

The actuary would disclose in the actuary's report changes in such processes, including the rationale for and impact of the changes.

**Specific considerations for insurance risks**

.08 **Insurance risks –** When advising the principal or the entity on assumptions to measure insurance risks, the actuary would consider relevant factors including the following:

- Characteristics of the insurance contract including the risks being insured;
- Characteristics of the policyholder and the way the contract was sold;
- Past experience of incurred claims including patterns of delays in reporting and payment and the relevance to expected future experience; and
- Practices of the entity such as underwriting procedures and claims management.

.09 **Policyholder Options –** When advising the principal or the entity on assumptions for the exercise of options by policyholders, the actuary would consider factors such as the following:

- Past experience of how policyholders have exercised options;
- Likely behaviour of policyholders, taking into account factors such as anti-selection, the effects of non-financial considerations, and the relative advantages to the policyholder of exercising any options;
- Characteristics of how the insurance contracts are sold and serviced;
- Significant scheduled changes in premiums, charges, benefits or terms and conditions; and
- Any short-term spikes in cancellation rates created by the exercise of certain options.

.10 **Entity Discretion –** When advising the principal or the entity on assumptions which consider the exercise of discretion by the entity, the actuary would take into account expectations, or limitations that may arise from sources, such as

- The entity's marketing and promotional materials;
- The entity's past practices;
- The entity's current policy;
- Market practices; and
- Laws and rulings of relevant authorities.

.11 **Reinsurance Contracts Held –** When advising the principal or the entity on the measurement of reinsurance contracts held, the actuary would

- When estimating amounts recoverable under multiple reinsurance arrangements, consider the order in which the reinsurance contracts apply;
- When estimating non-recoverable amounts, consider the financial condition of the reinsurer, the existence of collateral and the extent to which default by one reinsurer may affect the amounts recoverable from other reinsurers; and in the estimates of future cash flows to be received from reinsurance contracts, allow for the uncertainty caused by the potential of non-performance by reinsurers;
- When estimating fulfilment cash flows, consider the extent to which each reinsurance counterparty exercises its control over recapture, cancellation or commutation to its advantage; and
- Consider the impact of reinstatement of reinsurance contracts following claims.

.12 **Reinsurance Contracts Issued –** When advising the principal or the entity on the measurement of reinsurance contracts issued, the actuary would consider circumstances such as:

- The expected behaviour with respect to the available options of the policyholders, the issuer of the underlying insurance contracts and all intermediate reinsurers;
- The underwriting and management practices, including the underwriting of facultative placements, and the claim management processes impacting the reinsurance contracts issued;
- Reinstatements of reinsurance contracts following claims; and
- Default by the issuer of the underlying insurance contracts and all intermediate reinsurers.

.13 **Currency exchange –** When advising the principal or the entity on the estimation of fulfilment cash flows in multiple currencies, the actuary would reflect current market expectations of future currency exchange rates.

.14 **Discount rates –** When advising the principal or the entity on the derivation of

- Discount rates for periods beyond those for which observable data from an active market is available, the actuary would consider how current rates are expected to evolve over time using the best information available in the circumstances, including such market prices as are observable;
- Discount rates for cash flows of insurance contracts that vary with returns of the entity's invested assets, the actuary would consider the entity's investment policy, as applied in practice, taking into account the entity's communications to various stakeholders and, where applicable, anticipated policyholder behaviour;
- Illiquidity and credit or default adjustments for determining the discount rates, the actuary would consider
  - Approaches that are robust and that would be able to be applied reliably over time and under a variety of market conditions, to reflect the illiquidity of the cash flows underlying the relevant liabilities; and
  - The possible methods for calculating such adjustments to observed market rates. Methods include market-based techniques, structural model techniques and expected/unexpected credit loss techniques.

.15 **Contracts with cash flows that vary with returns on underlying items –** When advising the principal or the entity on contracts whose cash flows vary with returns on underlying items, the actuary would

- Select discount rates used to calculate the present value of the cash flows to measure the fulfilment cash flows that are consistent with the investment returns anticipated in the estimates of the future cash flows. Returns on assets would be estimated using prospective expectations consistent with current market expectations of future economic conditions; and
- For cash flows which are subject to a floor or a cap, consider the associated impact, if any, on the estimates of future cash flows, the risk adjustment for non-financial risk and the discount rates in the projection.

.16 **Maintenance expenses –** When advising the principal or the entity on the estimation of cash flows for maintenance expenses, such as policy administration and claim handling costs, and attributable overheads, the actuary would consider factors such as:

- The entity's cost-accounting and expense allocation policies;
- Expenses expected to arise from fulfilling insurance obligations existing on the measurement date. This estimate would consider factors such as the entity's past experience and current business plans, and the impact of future inflation; and
- Terms of any outsourcing arrangements.

.17 **Insurance acquisition cash flows –** The actuary would be satisfied that the allocation of insurance acquisition cash flows to each portfolio of insurance contracts is made on a consistent basis.

.18 **Risk adjustment for non-financial risk –** When advising the principal or the entity on the risk adjustment for non-financial risk, the actuary would

- Understand the non-financial risk inherent in the insurance contracts;
- In assessing what the entity requires as compensation for bearing the non-financial risk:
  - Reflect the diversification benefit that the entity recognizes at the relevant level of consolidation; and
  - Consider sources of relevant information such as the entity's capital management, risk management and pricing policies;
- Select a methodology that, at the chosen level of aggregation
  - Uses assumptions that are consistent with those used in the determination of the corresponding estimates of future cash flows;
  - Reflects the risk differences between the portfolios of insurance contracts; and
  - Allows for the diversification that the entity recognizes.
- Make appropriate allowance for mechanisms that result in risk being passed to the policyholder (e.g., contracts with participation or adjustment features);
- Consider whether the difference between the total of the calculated gross risk adjustments for non-financial risk and the total of the ceded risk adjustment for non-financial risk fairly reflects the compensation that the entity requires for bearing the uncertainty of its net exposure; and
- When advising on the confidence level disclosure required by IFRS 17, where the risk adjustment for non-financial risk has not been determined using a specified confidence level approach, consider
  - The ability to diversify non-financial risk over the entity's consolidated business; and
  - The inherent uncertainty in the translation to a confidence level and the need to describe such uncertainty in the actuary's report.

.19 **Aggregation and Contractual Service Margin (CSM) –** The actuary would treat the processes of

- Identification of portfolios of insurance contracts;
- Allocation of individual insurance contracts into portfolios of insurance contracts, and division of each portfolio of insurance contracts into groups of insurance contracts;
- Treatment of the loss component on onerous contracts;
- Determination of the coverage units; and
- Roll forward of the contractual service margin

as work subject to paragraph 2210.05.

The actuary would disclose in the actuary's report changes in the above process, including the rationale for, and impact of the changes.

**The Premium Allocation Approach (PAA)**

.20 When advising the principal or the entity in relation to the use of the PAA for a group of insurance contracts, the actuary would

- At initial recognition, if the coverage period is longer than one year, consider:
  - Differences between the expected patterns of insurance revenue under the general measurement approach and under the PAA;
  - Differences between the expected timing of cash flows under the general measurement approach and the insurance revenue under the PAA, resulting in different adjustments for the time value of money; and
  - Whether future assumption changes under the general measurement approach would render the simplification invalid

  when assessing whether material differences between the respective carrying amounts of the liabilities for remaining coverage under the PAA and the general measurement approach are reasonably expected to arise;
- Assess whether insurance contracts in the group have a significant financing component, advise the principal or the entity accordingly, and measure the liability accordingly;
- Be aware of whether the entity has chosen, in accordance with IFRS 17, to recognize insurance acquisition cash flows as expenses when it incurs those costs and determine the liability in accordance with the entity's choice;
- Be aware of whether the entity has chosen to reflect the time value of money and the effect of financial risk, when not required to do so, and determine the liability in accordance with the entity's choice; and
- Consider whether facts and circumstances indicate that the group of insurance contracts is or has become onerous and advise the principal or the entity accordingly.

**The Variable Fee Approach**

.21 In using the variable fee approach, the actuary would apply the guidance for the general measurement approach except for 2320.09 (Reinsurance Contracts Held) and 2320.10 (Reinsurance Contracts Issued), as the variable fee approach does not apply to reinsurance.

**Financial statement presentation and disclosure**

.22 Where the information provided by the actuary will be used in financial statement presentation and disclosure,

- The actuary would provide the related information needed to comply with the relevant presentation and disclosure requirements of IFRS 17 and the entity's accounting policies; and
- If the actuary becomes aware that such information is used in the presentations and/or disclosures incorrectly or inappropriately, the actuary would discuss and report these issues to the principal.

.23 In providing advice on the disclosures of reconciliations where the order of calculation alters the information disclosed, the actuary would apply a consistent order of calculation across all reconciliations and from period to period, or disclose any change, including the rationale for and impact of the change, in the actuary's report.

**Transition**

.24 When advising the principal or entity on whether the full retrospective application of IFRS 17 at transition is impracticable, the actuary would take into consideration factors such as:

- The availability and integrity of the past data that are required to determine the fulfilment cash flows;
- The availability and integrity of information on past products;
- The availability, without the benefit of hindsight, of sufficient data to determine the initial assumptions and subsequent changes that the entity would have adopted over the lifetime of the insurance contracts;
- The method that would have been used to adjust past known interest rates to achieve the rates that reflect the characteristics of the insurance contracts; and
- The difficulty, without the benefit of hindsight in evaluating the past risk adjustment for non-financial risk and entity's use of discretion.

## 2330 Communication

**Disclosures**

.01 In addition to complying with Section 1700, in any report other than the summary report described in subsection 2230, the actuary would disclose in the actuary's report

- Information regarding a change in assumptions or method, whether arising from a consistent or changed process;
- Changes in processes, together with the rationale for and impact of the changes, related to
  - The identification, combination, aggregation, separation, recognition, derecognition and modification (2320.02);
  - The selection of the measurement approach (2320.03);
  - The process for updating assumptions (2320.05);
  - Aggregation and contractual service margin (2320.17); and
  - The order of calculation on reconciliation provided for financial statement presentation and disclosure (2320.21); and
- When the risk adjustment for non-financial risks has not been determined using a confidence level approach, the uncertainty inherent in the translation to a confidence level (2320.16).

# 2400 The Appointed Actuary

## 2410 Definitions

.01 In sections 2400 and 2500, "senior management" means

- In the case of a Canadian insurer, the chief executive officer, the chief financial officer, and the chief risk officer; and
- In the case of a foreign insurer, both the chief agent for Canada and the person designated by the insurer as having responsibility for its Canadian operation.

.02 In this section 2400, "directors" means an insurer's board of directors and, in the case of a foreign insurer, includes the person whom they designate as responsible for the insurer's Canadian branch.

## 2420 Scope

.01 Part 1000 applies to work within the scope of this section 2400.

.02 This section 2400 applies to an appointed actuary who, pursuant to

- The federal Insurance Companies Act, is the actuary of a company or society;
- The federal Insurance Companies Act, is the actuary of the Canadian branch of a foreign company; or
- A provincial Act, has the access to information, protection against civil liability, and duties in an insurer, that are substantially the same as those of the appointed actuary in the federal Act.

.03 This section 2400 also applies to an actuary who has the access to information and protection against civil liability equivalent to that which the federal Insurance Companies Act grants to an appointed actuary, even if this actuary is not an appointed actuary.

## 2430 Accepting and continuing an engagement

.01 Section 1300 applies rigorously to the engagement. [Effective February 1, 2018]

**Qualifications, experience, and knowledge**

.02 The necessary qualifications, experience, and knowledge for the engagement go beyond technical understanding and include the awareness that comes with maturity, communication with other actuaries, discussions at Institute meetings, and familiarity with conditions both internal and external to the insurer, and include communications skills.

.03 An actuary accepting an engagement for the first time may wish to arrange professional, formal, and timely access to another actuary with experience as an appointed actuary.

.04 It is important that the insurer's directors understand and accept the actuary's role and its requirements for time, resources, and access to information. The actuary may wish written confirmation of the understanding and acceptance unless the role is part of the insurer's corporate culture.

**Information needed**

.05 The information necessary for the work consists of the records, accounts, documents, and oral briefings which provide an understanding of the insurer's operations, its obligations, and the resources available to meet those obligations. That information includes, but is not limited to

- Files of in-force policies and outstanding claims, including their reinsurance;
- Policy provisions and other communications with policy owners;
- Past experience data;
- Past financial data;
- Communications with auditors and regulators;
- Pricing practice;
- Underwriting practice;
- Accounting practice;
- Claims settlement practice (including case estimate practice) and cost;
- Asset-liability management practice;
- Capital management practice;
- Enterprise risk management policy; and
- Own risk and solvency assessment (ORSA) report.

.06 The process to identify and assure timely receipt of that information includes

- An understanding of the insurer's decision-making;
- Continual communication with members of management who can supply information; and
- Continual communication with the auditor in accordance with the CIA/CICA *Joint Policy Statement*.

## 2440 Report on matters requiring rectification

.01 The appointed actuary should identify and monitor matters that may threaten the insurer's financial condition. The appointed actuary should investigate and then report, as required by law, any such matter that requires rectification to the senior management and, in the case of a Canadian insurer, send a copy of the report to the directors. Depending on the jurisdiction of the insurer, the law may also require that the report be provided to the insurer's regulator. [Effective April 15, 2017]

.02 The report may include recommendations for rectification and should specify a deadline for rectification that the actuary may later extend if appropriate. If there is no suitable rectification by that deadline or its extension, then the appointed actuary should report the matter to the insurer's regulator. [Effective April 15, 2017]

.03 The sensitivity of financial condition to adverse conditions and events varies among insurers. Financial condition and hence, the magnitude of the conditions and events that may threaten it, also varies among insurers.

.04 The frequency and intensity of the monitoring depend on the threatening conditions and events and on the circumstances of the insurer. A quarterly review would usually be a minimum.

.05 There would be no such report to senior management of an adverse condition that does not threaten the insurer's financial condition. Informal notification and consultation would usually precede, and may obviate, that report to senior management.

.06 That report would describe the threatening condition or event and the assumptions and methods in the actuary's investigation of it. It is desirable that the report includes recommendations for its rectification.

.07 The deadline would allow time, that is reasonable in the circumstances, to arrange rectification.

.08 The report to the regulator would describe the actuary's investigation, the report to senior management, and senior management's response to that report. The actuary would advise the directors of the report to the regulator.

## 2450 Report to the directors

.01 The appointed actuary for a Canadian insurer should report at least yearly to the directors, or to their audit committee if the directors so delegate,

- On the insurer's financial position and financial condition; and
- If required by law;
  - If the insurer has one or more participating accounts;
    - On the method of allocation of income and expenses to each such participating account;
    - On the management of the participating account(s), the dividend policy and dividend scales for the participating policy owners; and
  - If the insurer has adjustable policies in force, on the criteria established or amended by the directors for changes made by the company to the premium or charge for insurance, amount of insurance or surrender value in respect of its adjustable policies. [Effective April 15, 2017]

.02 The appointed actuary for a foreign insurer should report at least yearly to its chief agent for Canada on its financial position and financial condition. [Effective April 15, 2017]

**Allocation of income**

.02 The report on allocation of income and expenses among accounts would consider the fairness and equity of such allocation to participating policy owners.

**Management of the participating account(s)**

.03 The report on the management of the participating account(s) would consider the fairness to participating policy owners of the policy established by the directors respecting the management of the participating account(s).

**Dividend policy and dividend scale**

.04 The report on the dividend policy would consider the fairness of the policy to the participating policy owners. The report on the dividend scale would consider the conformity of the dividend scale to the dividend policy and its fairness to the participating policy owners.

**Adjustments of adjustable policies**

.05 The report on adjustable policies would consider the fairness of the criteria for changes to adjustable policies established or amended by the directors, the fairness to adjustable policy owners of the adjustments made, and their conformity to those criteria.

**Fairness opinions**

.06 Where the applicable law requires that the appointed actuary opine on the fairness of the policies, criteria, or methods established by the insurer with respect to any of

- Management of the participating accounts;
- Dividend policy;
- Dividends declared;
- Policy established respecting the criteria for making adjustments to adjustable policies and the adjustments made under this policy;
- Allocation of investment income to the participating accounts; and
- Allocation of expenses to the participating accounts;

the wording of an unqualified opinion would be as follows:

> **Management of participating accounts opinion**
>
> I have reviewed the policy established by the Board of Directors with respect to the management of the participating accounts of [the Company], [including amendments made during the most recent 12 months]. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.
>
> In my opinion, the policy is fair to the participating policyholders.
>
> Mary F. Roe
> Fellow, Canadian Institute of Actuaries
> [Place of issue of opinion]
>
> [Date of opinion]

**Dividend policy opinion**

I have reviewed the policy established by the Board of Directors for determining the dividends [and bonuses or other benefits] of [the Company], [including amendments made during the most recent 12 months]. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.

In my opinion, the policy is fair to the participating policyholders.

Mary F. Roe
Fellow, Canadian Institute of Actuaries
[Place of issue of opinion]
[Date of opinion]

**Dividend declaration opinion**

I have reviewed the proposed dividends [and bonuses or other benefits], determined by the Board of Directors of [the company] with respect to policy years [ending between XX and YY], and have considered whether they have been determined in accordance with the policy established by the Board. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.

In my opinion, the proposed dividends [and bonuses or other benefits] are in accordance with the policy established by the Board and are fair to the participating policyholders.

Mary F. Roe
Fellow, Canadian Institute of Actuaries
[Place of issue of opinion]

[Date of opinion]

**Adjustable policy changes opinion**

I have reviewed the criteria established by the Board of Directors of [the company] with respect to any changes to be made to the premium or charge for insurance, amount of insurance or surrender value in respect of its adjustable policies [including amendments made during the most recent 12 months] and the changes made pursuant to those criteria. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.

In my opinion, the criteria are fair to the adjustable policyholders, and the changes made to the adjustable policies during the most recent 12 months are in accordance with those criteria and are fair to the adjustable policyholders.

Mary F. Roe
Fellow, Canadian Institute of Actuaries
[Place of issue of opinion]
[Date of opinion]

**Allocation of investment income to participating account(s) opinion**

I have reviewed the method established by the Board of Directors for determining the portion of the investment income or losses of [the company] for the financial year ending [XX], including capital gains and losses, that is allocable to the participating account [each participating account] maintained by the company. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.

In my opinion, the method is fair and equitable to the participating policyholders.

Mary F. Roe
Fellow, Canadian Institute of Actuaries
[Place of issue of opinion]

[Date of opinion]

**Allocation of expenses to participating account(s) opinion**

I have reviewed the method established by the Board of Directors for determining the portion of the expenses, including taxes, of [the company] for the financial year ending [XX] that is allocable to the participating account [each participating account] maintained by the company. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.

In my opinion, the method is fair and equitable to the participating policyholders.

Mary F. Roe
Fellow, Canadian Institute of Actuaries
[Place of issue of opinion]

[Date of opinion]

.07 If the appointed actuary is unable to issue an unqualified opinion, the wording of the opinion would be adjusted to reflect the necessary qualification.

## 2460 Communication with the auditor

.01 Communication with the insurer's auditor would be desirable when the actuary makes a report to the insurer's senior management on a matter requiring rectification or makes an unfavourable report on the insurer's financial condition.

## 2470 Certification of capital filings as required by the regulator

.01 This subsection 2470 applies to the appointed actuary of a life insurer when giving an opinion on the appropriateness of regulatory capital calculations pursuant to law or on the appropriateness of internal models used to determine required capital for segregated fund guarantees pursuant to requirements of the regulator.

.02 Such certifications should contain an opinion signed by the appointed actuary. [Effective April 15, 2017]

**Appropriateness of regulatory capital calculations**

.03 The appointed actuary should prepare a report to support the opinion on the appropriateness of regulatory capital calculations that outlines the areas where the calculation required discretion or significant technical calculations, and the methods and judgments that were applied. The report should be completed before the provision of a signed opinion pursuant to subsection 2470. [Effective February 22, 2018]

.04 The opinion would be provided annually in support of the fiscal year-end regulatory capital filing on form(s) as directed by the regulator.

.05 In providing such an opinion, the actuary would not be opining on whether the underlying factors or specified methods to be followed are appropriate but rather on the appropriateness of any interpretation and discretionary technical calculations and methods with respect to such guidelines.

.06 Here is the standard opinion language [insert appropriate wording where indicated by square brackets].

> "I have reviewed the calculation of the Life Insurance Capital Adequacy Test ratios of [company name] as at [date]. In my opinion, the calculations of the components of the base solvency buffer, available capital, surplus allowance, and eligible deposits have been determined in accordance with the regulatory guidelines, and the components of the calculations requiring discretion were determined using method and judgement appropriate to the circumstances of the company."
>
> [Note: For application to branches "Life Insurance Capital Adequacy Test ratios" is replaced by "Life Insurance Margin Adequacy Test (LIMAT)" and "Base Solvency Buffer" is replaced by "Required Margin" and "Available Capital" is replaced by "Available Margin".]
>
> [Note: For filings for provincially regulated companies, the ratio definition, and definitions of base solvency buffer, required capital, available capital, surplus allowance, and eligible deposits, would be amended to reflect the appropriate definitions in the provincial requirements.]

**Appropriateness of internal models used to determine required capital for segregated fund guarantees**

.07 The appointed actuary should prepare a report to support the opinion on the appropriateness of internal models used to determine required capital for segregated fund guarantees that outlines how the models comply with the related requirements of the regulator. The report should be completed before the provision of a signed opinion pursuant to subsection 2470. [Effective April 15, 2017]

.08 The opinion would be provided annually in support of the fiscal year-end regulatory capital filing on form(s) as directed by the regulator. The opinion would also be provided to the regulator upon a new application to the regulator for permission to use such a model for required capital purposes and upon request of the regulator when making a modification to an existing model approved by the regulator.

.09 In providing such an opinion, the actuary would not be opining on whether the underlying factors or specified methods to be followed are appropriate, but rather on the compliance with the requirements of the regulator.

.10 Here is the standard opinion language [insert appropriate wording where indicated by square brackets].

> "I have reviewed the internal model of [company name] for determining required capital for segregated fund guarantee risks as at [date] in the context of the requirements of [the regulator]. In my opinion, the [proposed] model is compliant in all material respects with the requirements of [the regulator] for an approved model used to determine required capital for segregated fund guarantee risks."

# 2500 Financial Condition Testing

## 2510 Scope

.01 Part 1000 applies to work within the scope of this section 2500.

.02 This section 2500 applies to the appointed actuary of an insurer when reporting on the insurer's financial condition pursuant to law.

## 2520 Analysis

.01 The appointed actuary should make an investigation at least once during each financial year of the insurer's recent and current financial position and financial condition, as revealed by financial condition testing for selected scenarios. [Effective January 1, 2020]

.02 The appointed actuary should make a report of each investigation in writing to the insurer's board of directors (or to the appropriate committee of the board such as audit committee, risk committee, etc., if they so delegate) or its chief agent for Canada. The report should identify possible actions, and reasons for those actions, for dealing with any threats to satisfactory financial condition that the investigation reveals. The actuary should also comment on the consistency of the results of the investigation and possible actions with the own risk and solvency assessment (ORSA). [Effective January 1, 2020]

.03 The appointed actuary should ensure that the investigation is current. The investigation should take into consideration recent events and recent financial operating results of the insurer. [Effective April 15, 2017]

.04 The timing and frequency of the appointed actuary's investigations would be sufficient to support timely corrective actions by management and the board of directors or chief agent for Canada.

**Recent and current financial position**

.05 The investigation would review operations of recent years and the financial position at the end of each of those years.

**Financial condition testing**

.06 Financial condition testing examines the effect of selected adverse scenarios on the insurer's forecasted capital adequacy. The actuary can supplement the financial condition testing with the use of other means, such as the ORSA and the business plan.

.07 The purpose of financial condition testing is to identify plausible threats to satisfactory financial condition, actions that would lessen the likelihood of those threats, and actions that would mitigate a threat if it materialized.

.08 Financial condition testing is defensive, i.e., it addresses threats to financial condition rather than the exploitation of opportunity.

**Satisfactory financial condition**

.09 The insurer's financial condition would be satisfactory if throughout the forecast period,

- Under the solvency scenarios, the statement value of the insurer's assets is greater than the statement value of its liabilities;
- Under going concern scenarios, the insurer meets the regulatory minimum capital ratio(s); and
- Under the base scenario, the insurer meets its internal target capital ratio(s) as determined by the ORSA.

**Data, methods, and assumptions**

.10 The actuary would start the forecast period using the data as of the most recent available fiscal year-end statement of financial position date.

.11 The assumptions and methods would reflect up-to-date studies and analysis available to the actuary.

.12 The policy liabilities would be revalued at the end of the first financial year of the forecast period if a change in assumption or method that is expected to be made by the insurer would result in a material change to the financial position of the insurer.

.13 The actuary would consider recent events and recent operating results of the insurer up to the date of the report.

.14 If an adverse event occurs between the date of the report and the date of its presentation to the insurer's board of directors (or its chief agent for Canada), then the actuary would, at a minimum in the presentation to the insurer's board of directors (or its chief agent for Canada), address the event and its potential implications on the results of the investigation. If appropriate, the actuary would redo the investigation.

**Forecast period**

.15 The forecast period for a scenario would be sufficiently long to be aligned with the risk emergence and the recognition of impacts through the accounting and solvency results, and to capture the effect of management actions.

**Scenarios**

.16 The scenarios would consist of a base scenario and adverse scenarios. Each scenario takes into account not only in-force policies but also the policies assumed to be sold or acquired during the forecast period, and both insurance and non-insurance operations (e.g., asset management, banking, or trust company subsidiaries).

**Base scenario**

.17 The base scenario would be a realistic set of assumptions used to forecast the insurer's financial position over the forecast period. Normally, the base scenario would be consistent with the insurer's business plan. The actuary would accept the business plan's assumptions for use in the base scenario unless these assumptions are so inconsistent or unrealistic that the resulting report would be misleading. The actuary would report any material inconsistency between the base scenario and the business plan.

**Adverse scenarios**

.18 An adverse scenario is developed by stress testing the assumptions used in forecasting the business plan, including the determination of insurance contract liabilities, with regard to risk factors that may trigger potential threats to the insurer's financial condition. The number and types of adverse scenarios may vary among insurers and over time for a particular insurer.

**Solvency scenario**

.18.1 A solvency scenario is a plausible adverse scenario if it is credible and has a non-trivial probability of occurring. The actuary may use percentile rankings of outcomes to determine whether a solvency scenario is both plausible and adverse.

.19 The actuary would consider material, plausible risks or events to the insurer. Reverse stress testing can help assess whether certain risk factors need to be tested, on the grounds that certain risk factors could never deteriorate to the point where they would be a threat to the insurer's financial condition. The actuary can thereby determine whether a material, plausible risk or event exists for the insurer over the forecast period.

**Going concern scenario**

.19.1 A going concern scenario is an adverse scenario that is more likely to occur and/or less severe than a solvency scenario, and could include risks not considered in solvency scenarios.

**Risk categories**

.20 The actuary would assess various risk categories and identify those that are relevant to the insurer's circumstances when considering threats to capital adequacy under adverse scenarios.

.21 Repealed

**Integrated scenarios**

.22 The actuary would construct integrated scenarios by combining two or more risk factors whose combination gives rise to an adverse scenario.

.23 In developing integrated scenarios, the actuary would consider how risk factors interact. For example, the impact of combining adverse scenarios for two or more risk factors, where each is associated with a relatively high probability, may give rise to an integrated adverse scenario to which the insurer's financial condition is sensitive. In such cases, an integrated scenario would be constructed by combining stress tests related to two or more risk factors. An integrated scenario would be designed so as to itself constitute an adverse scenario.

.24 Repealed

**Ripple effects**

.25 In assuring consistency within each scenario, the actuary would consider ripple effects, including policy owner action, management's routine action, and regulatory action. Although most of the other assumptions used in the base scenario may remain appropriate under the adverse scenario, some may require adjustment to reflect the interdependence of assumptions in the adverse scenario.

.26 Selection of the assumptions for management's routine action would, where appropriate, take into account

- Effectiveness of the insurer's management information systems and adjustment mechanisms;
- Insurer's historical record of promptness and willingness, to respond to adversity;
- Policy owner action; and
- External environment assumed in the scenario.

.27 The actuary would report management's routine action, so that users may consider its practicality and adequacy. The actuary may also report the results assuming that the insurer does not respond to the adversity.

.28 Ripple effects also include regulatory action, which would vary depending on the regulatory capital ratio requirement breached by the adverse scenario. The actuary would consider action that could be taken by the Canadian regulator(s) as well as action taken by regulators in foreign jurisdictions. Such regulatory action and associated management action would consider the local assessment of solvency regardless of the insurer's worldwide solvency position as measured by Canadian regulatory standards. The actuary could also review the regulatory actions included in the ORSA's scenario testing, including internal target-setting exercise, and consider their applicability to the financial condition testing's adverse scenarios.

**Corrective management actions**

.29 For each of the adverse scenarios that would result in a threat to satisfactory financial condition, the actuary would identify possible corrective management actions that would lessen the likelihood of that threat, or that would mitigate that threat, if it materialized.

.29.1 Consideration would also be given to the effectiveness of possible corrective management actions in a volatile or stressed environment.

**Management actions**

.29.2 Management actions may include but are not limited to

- Repricing of insurance products;
- Policyholder dividend scale updates;
- Adjustments to non-guaranteed product elements;
- Suspending dividend payments, capital reductions, and transfers to the parent or home office, where applicable;
- Raising additional capital or adopting an approved plan to raise additional capital if and when needed within a reasonable time frame, or, in the case of a branch, requesting transfer of adequate funds from the parent company;
- Strengthening risk management practices;
- Mitigating the risk causing the capital shortfall; and
- An increased level of monitoring and reporting with respect to the insurer's capital position.

.30 Whether a management action is considered a ripple effect, a corrective management action, or a combination of both, would depend on the scenario analyzed and circumstances of the insurer.

**Scope of the investigation and report**

.31 The report would contain the key assumptions of the base scenario and the adverse scenarios posing risks to the satisfactory financial condition of the insurer.

.32 The report would disclose each of the risks considered in undertaking the financial condition testing analysis. It is expected that the actuary would scenario test and report at least once during each financial year on the base scenario, and adverse scenarios posing significant risk for the insurer.

.33 The report would also contain the adverse scenarios examined that cause the insurer to fall below its internal target capital ratio(s) as determined by the ORSA. The report would make it clear whether under these scenarios the regulators may impose restrictions on the operations of the insurer, including its ability to write new business.

.34 If the investigation identifies any plausible threat to satisfactory financial condition, then the actuary would identify possible corrective management action that would lessen the likelihood of that threat, or that would mitigate that threat, if it materialized. For each such adverse scenario reported upon, the actuary would report the results both with and without the effect of corrective management action. The actuary would ensure that the disclosure of the corrective management action is sufficiently clear so that users may consider its practicality and adequacy.

.35 The report would present the financial position of the insurer at each fiscal year-end throughout the forecast period.

**Revaluation of the policy liabilities**

.36 Ideally, for the base and each adverse scenario, the insurance contract liabilities and, if applicable, other policy liabilities or reinsurance assets, would be revalued throughout the forecast period.

**Frequency and/or timing**

.37 The frequency and/or timing of the report would depend on the urgency of the matters being reported and on the desirability of aligning financial condition testing into the insurer's financial planning cycle and the ORSA process.

.38 The frequency and/or timing of the actuary's investigation would be adjusted where an adverse change in the insurer's circumstances since the last investigation may be so significant that to delay reporting to the time of the next scheduled investigation would be imprudent. For example, failure to meet the internal target capital ratio(s), or adoption of a radically different business plan, may necessitate the preparation of an immediate report.

## 2530 Reporting

.01 In the case of a Canadian insurer, the appointed actuary should report to the board of directors or to an appropriate committee of the board (audit committee, risk committee, etc.) if they so delegate. In the case of a Canadian branch of a foreign insurer, the appointed actuary should report to the chief agent for Canada and may also report to the responsible senior executive in the parent head office. [Effective February 22, 2018]

.02 In order to give the insurer's senior management an opportunity to react to the results of the investigation, the actuary would discuss the report with the insurer's senior management in advance of its submission to the board of directors or chief agent for Canada.

.03 The report would be in writing, but an additional oral report that permits questions and discussions is desirable. An interpretative report would be more useful than a statistical report. The actuary would also consider other reporting such as the ORSA report to ensure, where appropriate, the consistency of messages and/or delivery of consolidated ORSA and financial condition testing results.

.04 The report would be submitted within 12 months following each fiscal year-end.

## 2540 Opinion by the actuary

.01 The report should contain an opinion signed by the appointed actuary. [Effective April 15, 2017]

.02 In this opinion, "future financial condition" has the same meaning as "financial condition." The actuary may use the words "future financial condition" in order to comply with legislation or regulation in some jurisdictions.

.03 The wording of the opinion follows: [insert appropriate wording where indicated by square brackets]

> "I have completed my investigation of the [future] financial condition of [insurer name] as at [date] in accordance with accepted actuarial practice in Canada.
>
> I have analyzed its forecasted financial positions over an appropriate forecast period under a series of scenarios. As part of my investigation, I have used [the ORSA and its determination of] or [insurer name] internal target capital ratio(s).
>
> [My report includes the identification of corrective management actions that could be taken to mitigate the effect of adverse scenarios threatening [[insurer name] [solvency]] or/and [its ability to operate on a going concern basis]].
>
> In my opinion, the [future] financial condition of the insurer [is satisfactory] or [is satisfactory subject to…] or [is not satisfactory for the following reason(s)...]."
>
> [Montréal, Québec] [Mary F. Roe]
> [Report date] Fellow, Canadian Institute of Actuaries

.04 A satisfactory opinion would disclose the action(s) it is subject to for any of the following situations:

- The base scenario projected regulatory capital ratios are maintained or brought back above internal target capital ratios as a result of an existing plan consistent with regulatory expectations.
- For the base scenario:
  - Regulatory capital ratios are projected to decrease below internal target capital ratio(s) at a period beyond the regulator's monitoring horizon;
  - The insurer has a plan to bring the ratios back above internal targets within a time frame consistent with regulatory expectations; and
  - The appointed actuary is satisfied that such plan is realistic.
- For going concern scenarios, the appointed actuary is satisfied that corrective management actions can restore the insurer's regulatory capital ratio(s) to above regulatory minimum capital ratio(s) in a manner consistent with regulator's expectations.
- For solvency scenarios, the appointed actuary is satisfied that corrective management actions under the control of the insurer can restore the insurer's assets to be sufficient to meet its obligations.

.05 Situations where a satisfactory financial condition is met because of management's routine actions, would not require the opinion to state those actions

# 2600 Ratemaking: Property and Casualty Insurance

## 2610 Scope

.01 Part 1000 applies to work within the scope of this section 2600.

.02 This section 2600 applies to the derivation of indicated rates for an insurance contract of property and casualty insurance written by an insurer, a reciprocal insurance exchange, or an underwriting syndicate.

.03 This section 2600 does not apply to the derivation of indicated rates for public personal injury compensation plans covered by the Practice-Specific Standards for Public Personal Injury Compensation Plans.

.04 This section 2600 applies to the derivation of indicated rates for any entity, such as a residual market mechanism or an advisory organization, which derives indicated rates for an insurance contract to be written by an insurer, regardless of whether or not that entity is itself an insurer.

.05 This section 2600 applies to the derivation of indicated rates, but not to the recommendation or selection of rates to be charged. The recommended or selected rates may reflect considerations beyond those set forth in this section 2600.

.06 This section 2600 also applies to the derivation of indicated rates for insurance risks accepted by a property and casualty quasi-insurer, similar to insurance risks accepted under an insurance contract. In this section 2600, "property and casualty quasi-insurer" means an entity that assumes insurance risks that a property and casualty insurer may assume, without having the legal form of an insurer. Examples of property and casualty quasi-insurers include

- Federal or provincial crown corporations or agencies acting in a capacity similar to a property and casualty insurer;
- Providers of extended warranties; and
- Self-funding mechanisms, such as those created by members of a professional association, or entities that retain some or all of their property and casualty insurance risk.

## 2620 Method

.01 The best estimate present value of cash flows relating to the revenue at the indicated rate should equal the best estimate present value of cash flows relating to the corresponding claim costs and expense costs, plus the present value of a provision for profit, over a specified period of time. [Effective April 15, 2017]

.02 The actuary should select appropriate methods, techniques, and assumptions recognizing that such elements depend on the circumstances affecting the work and that a variety of actuarial methods may be appropriate to derive an indicated rate. [Effective February 1, 2018]

**Data**

.03 The actuary would consider the availability and relevance of subject experience and related experience.

**Credibility**

.04 The actuary would consider the blending of information from subject experience with information from one or more sets of related experience to improve the predictive value of estimates.

**Changes in circumstances**

.05 The actuary would consider that the subject experience, related experience, and future cash flows may be affected by changes in circumstances that may affect expected claim costs, expense costs, and provision for profit.

.06 Relevant circumstances subject to change may include items that are largely under the control of the entity providing insurance, such as

- Underwriting practice;
- Distribution system;
- Claims handling and case estimate setting practice;
- Reinsurance arrangements;
- Data processing and accounting systems;
- Distribution or type of business written;
- Provisions of the insurance contract(s), when not legislated;
- Premium rates; and
- Rating variables;

as well as items that are largely not under the control of the entity providing insurance, such as

- Legislated coverage or benefits; and
- The economic, social, and legal environments.

**Development**

.07 The actuary would consider that subject experience and related experience may be subject to development over time.

**Trend**

.08 The actuary would consider that subject experience and related experience may be subject to trend over time.

**Unusual events**

.09 The actuary would consider that subject experience and related experience may or may not have been subject to catastrophes, large losses, or other unusual events.

**Provision for expense costs**

.10 The actuary would determine the provision for expense costs that is appropriate for the period during which the rates are expected to be in effect.

.11 In selecting a provision for expense costs, the actuary would consider

- The various categories of expense costs that are incurred including, as may be applicable, residual market assessments, statutory assessments, policyholder dividends, and reinsurance costs;
- That expense costs may not be directly proportional to premium; and
- That one-time expense costs may need to be amortized.

.12 The provision for expense costs, or other assumptions that are pertinent to its derivation, may be specified to the actuary under the terms of an appropriate engagement.

**Provision for profit**

.13 An indicated rate would include a provision for profit.

.14 The provision for profit, or other assumptions that are pertinent to its derivation, may be specified to the actuary under the terms of an appropriate engagement.

**Time value of money**

.15 The investment return rate for calculating the present value of cash flows would reflect the expected investment income to be earned on assets that might be acquired with the net cash flows resulting from the revenue at the indicated rate.

.16 Among various possible sets of such assets the actuary would consider

- Risk-free assets of appropriate duration;
- Fixed-income assets of appropriate duration; and
- Assets which are expected to be acquired.

.17 The actuary would consider the fact that the provision for profit is not independent of the selected investment return rate and its associated uncertainty.

## 2630 Reporting

.01 If an external user report is required and the actuary can report without reservation, the actuary's report should include the standard reporting language consisting of the following scope paragraph,

> I have derived the indicated rate(s) in accordance with accepted actuarial practice in Canada, on behalf of [entity commissioning the work], for the following insurance category(ies): [name of insurance category(ies)], to be effective Month XX, 20XX for new business and Month XX, 20XX for renewal business. [Effective February 1, 2018]

.02 If an external user report is required and the actuary cannot report without reservation, the actuary should modify the standard reporting language accordingly. [Effective February 1, 2018]

.03 An additional opinion paragraph may be included to conform to the requirements of an external user.

# 2700 Policyholder Dividend Determination

## 2710 Scope

.01 Part 1000 applies to work within the scope of this section 2700.

.02 Section 2700 applies to advice provided on policyholder dividend determination on individual life, annuity, and health policies.

## 2720 Report on policyholder dividends

.01 There should be a written report which documents the advice on policyholder dividend determination, and which describes the framework of facts, assumptions, and procedures upon which the advice was based. [Effective April 15, 2017]

.02 The report should include

- A description of the process used to determine dividends;
- The manner in which policy and experience characteristics are reflected in that process; and
- The methodology used to calculate dividends, including specific factors used to reflect policy and experience characteristics. [Effective April 15, 2017]

.03 The report should state whether or not the contribution principle has been followed, and, if it has not been followed, the report should describe any deviations and their rationale. [Effective April 15, 2017]

# 2800 Public Personal Injury Compensation Plans

## 2810 Scope

.01 The standards in this section apply to public personal injury compensation plans for both the valuation of insurance contracts and other obligations for financial reporting in accordance with IFRS 17 and the valuation of benefits liabilities for funding purposes.

.02 Subsection 2820 applies to the valuation of insurance contracts and other obligations for financial reporting in accordance with IFRS 17.

.03 Subsection 2830 applies to the work and advice an actuary provides with respect to the valuation of benefits liabilities for funding purposes.

.04 The standards in subsection 2840 provide requirements for a gain and loss analysis resulting from the valuation of insurance contracts and other obligations for financial reporting in accordance with IFRS 17 or the valuation of benefits liabilities for funding purposes.

.05 The standards in subsection 2850 provide requirements for the sensitivity analysis to be conducted for the valuation of insurance contracts and other obligations for financial reporting in accordance with IFRS 17 or the valuation of benefits liabilities for funding purposes.

.06 The standards in subsection 2860 replace those in subsection 2230 and provide requirements for reporting on valuation of insurance contracts and other obligations for financial reporting in accordance with IFRS 17 or the valuation of benefits liabilities for funding purposes, including the actuary's opinion, reporting on the gain and loss analysis required under subsection 2840 and reporting of the work related to sensitivity testing required under subsection 2850 resulting from valuations.

.07 The standards in this section may provide useful guidance for other work of an actuary for a public personal injury compensation plan, such as work on the development of assessment rates or premiums, the costing of insurance contract or policy changes, or work on experience-rating programs.

## 2820 Valuation of Insurance Contracts and Other Obligations for Financial Reporting

.01 The actuary should follow the requirements under Sections 2100, 2200, and 2300 based on the accounting policies adopted by the public personal injury compensation plan for financial reporting under IFRS 17. [Effective January 1, 2023]

.02 Notwithstanding paragraph 2820.01 above, the actuary should follow the reporting requirements under subsection 2860 in lieu of those prescribed in subsection 2230. [Effective January 1, 2023]

## 2830 Valuation of Benefits Liabilities for Funding Purposes

.01 This subsection 2830 applies to the work and advice an actuary provides under the terms of an appropriate engagement for purposes of the funding of a public personal injury compensation plan.

.02 Sections 2100, 2200 other than subsection 2230, and section 2300 apply to the work under this subsection with the exceptions and variations as noted below.

## 2831 Circumstances Affecting the Work

.01 The actuary's work on the valuation of the benefits liabilities or other items for the purpose of providing input into its funding arrangements should take into account the circumstances affecting the work. [Effective January 1, 2023]

.02 For the purposes of subsection 2830, the circumstances affecting the work would include:

- Terms of the relevant statute and regulations;
- Relevant policies and practices of the public personal injury compensation plan; and
- Terms of an appropriate engagement under which the work is being performed.

.03 The terms of an appropriate engagement would define the role of the actuary and the purpose of the work. The work of the actuary may be limited to the valuation of the benefits liabilities, or the work may also include advice on the funding of the public personal injury compensation plan, its financial position, and any other actuarial item required under the terms of an appropriate engagement.

.04 The terms of an appropriate engagement may specify applicable policies of the public personal injury compensation plan relevant to the work of the actuary. These policies may include a funding policy, operational policies and practices, and an investment policy.

.05 Significant terms of an appropriate engagement may stipulate one or more of:

- Use of a specified asset value or method of asset valuation;
- The treatment of self-insured employers;
- The conditions considered in the liability for potential future occupational disease claims; and
- Depending on the circumstances affecting the work, treatment of definitive amendments and other pending changes.

.06 Objectives of funding specified by the terms of an appropriate engagement may include, but are not limited to, a specific funding target, the security of benefits, a principle of equity among various groups of employers or various groups of individuals or among generations, or a funding approach for occupational disease claims.

.07 The purpose of the work may influence one or more of:

- The assumptions chosen for the valuation, including the discount rate;
- The methods used in the valuation; and
- The provision for adverse deviations included in the valuation, if any.

.08 The actuary would consider the plan's funding and investment policies.

.09 For the purposes of subsection 2830:

- New injury costs refers to the actuarial present value of benefits payable by the plan in respect of all new injuries incurred in a period, whether reported or not, including a provision for the incurred exposure to long latency occupational diseases during the same period, where appropriate.
- Required revenue is an estimate of the amount necessary to fund the plan including new injury costs, plan administrative expenses, and any revenue adjustment required by the plan's funding policy to respond to its financial position.

.10 A funding valuation may be completed to determine any or all of the following:

- The plan's financial position under the funding valuation basis;
- An estimate of new injury costs for periods following the calculation date;
- An estimate of required revenue for periods following the calculation date; and
- The sufficiency of proposed premium or assessment rates.

## 2832 Economic Assumptions

.01 The economic assumptions chosen for the valuation should be consistent with the plan's funding and investment policies. [Effective January 1, 2023]

.02 The economic assumptions that are needed would depend on the nature of the benefits that are being valued, and may vary by year. Generally, the needed economic assumptions would include a discount rate and various inflation rate assumptions such as general inflation, wage inflation, and health care inflation.

.03 The economic assumptions chosen for the valuation would be internally consistent. In particular, the chosen assumptions would generally be appropriate for a similar time horizon. For example, a long-term investment rate of return assumption would generally not be combined with an inflation assumption based on short-term expectations. Similarly, the valuation would generally not mix assumptions based on current market prices (e.g., market-implied inflation expectation) with those not based on current prices.

.04 When determining a best estimate assumption for the expected rate of investment return, the actuary would take into account the expected investment return on the assets of the public personal injury compensation plan at the calculation date and the expected investment policy after that date.

.05 In establishing the assumption for the expected rate of investment return, the actuary would assume that there would be no additional returns achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy except to the extent that the actuary has reason to believe, based on relevant supporting data, that such additional returns will be consistently and reliably earned over the long term.

.06 The expected investment expenses would depend on the investment policy of the plan, the types of investments held and projected to be held in the future, and the nature of investment operations.

.07 The actuary may adopt an assumption for the expected rate of investment return that varies depending on the part of the public personal injury compensation plan being valued and the assets backing the liabilities in that part.

.08 The economic assumptions need not be a flat rate but may vary from period to period.

## 2833 Margins for Adverse Deviations

.01 The actuary should only include margins for adverse deviations when the circumstances affecting the work require such margins. A non-zero margin should be sufficient, without being excessive, and should have the effect of increasing the benefits liabilities or reducing the reported value of the offsetting assets, the computation of which falls within the scope of the work of the actuary. In addition, the provision resulting from the application of all margins for adverse deviations should be appropriate in the aggregate. [Effective January 1, 2023]

.02 If the actuary is required by legislation, regulation, or the funding policy of the plan to use a margin for adverse deviations that is outside the range that the actuary considers appropriate, the actuary should use such an imposed assumption, subject to the disclosure requirements under subsection 2860. [Effective January 1, 2023]

.03 The actuary's decision with respect to margin for adverse deviations may reflect considerations such as

- Funding policy of the public personal injury compensation plan;
- Relative importance placed on the balancing of competing interests compared to the achievement of full funding;
- Underlying adaptability of the plan to changes in financial position;
- Legislative requirements regarding margins;
- Intergenerational equity among employers and other groups;
- Level of uncertainty inherent in the assumptions;
- Level of reliability or credibility of the data or historical information upon which the assumptions are based;
- Asset/liability mismatch risk;
- Propensity for ad hoc changes to be made to plan conditions; and
- Legislative or other restrictions on the ability to mitigate past losses.

.04 Examples of situations where the circumstances affecting the work might require a best estimate calculation include

- Legislation governing the plan may require a best estimate calculation; or
- The plan's funding policy may recognize the monopoly nature of the plan and place a high priority on equity among generations, employers, and other groups.

## 2840 Gain and Loss Analysis

.01 For each of the valuation for financial reporting purposes under subsection 2820 and valuation for funding purposes under subsection 2830, the actuary should conduct a gain and loss analysis, including a comparison of actual and expected experience for the period between the prior calculation date and the current calculation date. [Effective January 1, 2023]

.02 The actuary should also conduct a reconciliation of the surplus or deficit position of the plan, provided that such reconciliation is in accordance with the terms of an appropriate engagement. [Effective January 1, 2023]

.03 The actuary's analysis would include all material gains and losses. At a minimum, the actuary's gain and loss analysis would consider the impact of any significant changes to the assumptions or methods used, any significant changes to the benefits or policies of the plan, legislative changes, investment returns on the plan's assets different from the assumed basis (if reconciling the surplus or deficit position of the plan), and any other areas where the difference between actual and expected experience is significant.

.04 The actuary would report a change in assumption if the current assumption differs nominally from the corresponding prior assumption, unless the change in the nominal amount results from the application of the same calculation method. For example, if certain rates used in the valuation are based on historical claims experience and calculated using the same averaging formula, the difference in assumed rates between the calculation date and the prior calculation date would not normally be considered as a change in assumptions. Nevertheless, the actuary may choose to disclose the effect of the updated rate assumption on the valuation results.

## 2850 Sensitivity Analysis

.01 For each of the valuation for financial reporting purposes under subsection 2820 and valuation for funding purposes under subsection 2830, the actuary should perform sensitivity testing of adverse scenarios, to illustrate and aid the understanding of the effect of adverse changes to assumptions. [Effective January 1, 2023]

.02 The adverse scenarios that the actuary tests should include at least:

- A decrease of 100 basis points in the gross discount rate used for the valuation; and
- An increase of 100 basis points in the assumed general rate of inflation while maintaining the gross discount rate at the value used in the underlying valuation. [Effective January 1, 2023]

.03 The actuary should consider other scenarios that, in the actuary's judgment, represent plausible material risks to which the plan may be exposed, and provide sensitivity testing of those scenarios where appropriate given the circumstances affecting the work. [Effective January 1, 2023]

.04 When selecting the assumptions and scenarios for sensitivity testing, the actuary would consider the circumstances affecting the work, and would select those assumptions that have a material impact on the benefits liabilities. The actuary may consider testing integrated sensitivity scenarios; for example, the effect of a deep and prolonged recession.

.05 The actuary may also perform sensitivity testing of favourable scenarios.

## 2860 Reporting

.01 For each of the valuation for financial reporting purposes under subsection 2820 and valuation for funding purposes under subsection 2830, the actuary should prepare a report in accordance with the circumstances affecting the work. [Effective January 1, 2023]

.02 If the actuary can report without reservation, then the actuary's report should conform to the standard reporting language. Otherwise, the actuary should modify the standard reporting language to report with reservation. [Effective January 1, 2023]

.03 An external user report on the work pursuant to subsection 2820 should:

- When the insurance contract liabilities and other obligations disclosed in the financial statements are different than the benefits liabilities calculated under subsection 2830 for funding purposes, the actuary should so state, explain the reason for the difference and provide the effect on the funding level reported in the financial statements;
- Where included in the measurement of insurance contract liabilities, the actuary should disclose the present value of future premium adjustments comprised in the assessment of the fulfillment cash flows for financial reporting purposes, including the underlying methodology and assumptions; and
- Describe the actuary's role in the preparation of the public personal injury compensation plan's financial statements if that role is not described in those statements or their accompanying management discussion and analysis. [Effective January 1, 2023]

.04 An external user report on work pursuant to subsection 2830 should:

- When the benefits liabilities calculated for funding purposes are different than the insurance contract liabilities and other obligations calculated under subsection 2820 for financial reporting purposes, the actuary should so state, explain the reason for the difference and provide the effect on the funding level reported for funding purposes;
- Report the aggregate provision for adverse deviations included in the benefits liabilities or state that there is no provision for adverse deviations where that is the case; and
- Disclose any imposed margins that the actuary has used in accordance with paragraph 2833.02 that, in the opinion of the actuary, are outside of the appropriate range and also disclose the reason and the financial impact. [Effective January 1, 2023]

.05 The actuary's report on work pursuant to section 2800 should also

- Describe any significant terms of the appropriate engagement that are material to the actuary's work, including the purpose of the work;
- State the calculation date and the prior calculation date;
- Identify, and where applicable, conform to, the legislation or other authority under which the work is completed;
- Describe the sources of data, benefit provisions, and policies used in the work, and any limitations thereon;
- Summarize the data used for the valuation, the data tests conducted to assess the accuracy and completeness of the data used in the work, issues regarding insufficient or unreliable data, and any assumptions and methods used in respect of insufficient or unreliable data;
- Describe the plan's benefits, significant policies, and relevant administration practices, including the identification of any amendments made since the prior calculation date, and the effect of such amendment on the benefits liabilities;
- Disclose the measurement approach used;
- Describe the assumptions and methods used to calculate the benefits liabilities;
- Summarize the insurance contracts and other obligations or benefits liabilities, as may be applicable;
- Describe the treatment of insurance contracts and other obligations or benefit liabilities for self-insured employers, as may be applicable;
- Describe the treatment of the liabilities for occupational disease claims;
- Describe and quantify the gains and losses between the prior calculation date and the current calculation date, and provide an analysis and explanation of the significant gain and loss items;
- If required by the terms of an appropriate engagement, provide an opinion on the sufficiency of proposed premium or assessment rates; and
- If the the terms of an appropriate engagement do not include a request to report the results of the sensitivity testing that was completed, be accompanied by a separate report for the management of the public personal injury compensation plan that does include such sensitivity testing results. [Effective January 1, 2023]

.06 Where the terms of an appropriate engagement require the actuary to provide information on the plan's financial position for funding purposes or cost of new injuries for rate setting purposes, the actuary should:

- Describe the sources of information on the plan's assets;
- Describe the plan's assets, including their market value, the assumptions and methods used to value the assets, and a summary of the assets by major category;
- Report the financial position for funding at the calculation date;
- Describe the determination of new injury costs or required revenue (all components separately) for periods following the calculation date; and
- Report the estimate of new injury costs or required revenue (total and all components separately)for a specified period following the calculation date and disclose the amount that constitutes the portion of new accident costs attributable to the incurred exposure to long latency occupational diseases during the same period, where applicable. [Effective January 1, 2023]

.07 An external user report would be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation.

.08 The descriptions and estimates required in an external user report may be satisfied by reference to another report provided the actuary is satisfied that the work presented in that report is appropriate. For instance, the liability estimate for potential future occupational disease claims or future administrative expenses may be based on a previous study of the plan's experience that is updated periodically. The details underlying these estimates could be incorporated by referencing the last study on which they are based rather than incorporating that material directly into the valuation report. Similarly, a report prepared for one purpose (e.g., funding) may reference material in a report prepared for another purpose (e.g., financial reporting) where appropriate.

.09 An internal user report may appropriately abbreviate the reporting requirements for an external user report. The degree of abbreviation would take into consideration the circumstances affecting the work and the intended audience.

.10 The actuary's advice on funding may describe a range for required revenue including disclosure of any premium rate adjustment resulting from the application of the funding policy or expected new injury costs. Funding requirements may be expressed in dollars or as a percentage of assessable payroll.

**Disclosure of Unusual Situations**

.11 The items that the actuary values for the financial statements may be misleading if the financial statements do not present them fairly. The actuary's report signals to the reader of the financial statements that there is, or is not, fair presentation.

.12 In an unusual situation, fair presentation may require explanation of an item that the actuary values for the financial statements. Usually, the notes to the financial statements would provide that explanation, including, where appropriate, disclosure of the situation's effect on the financial statements. In the absence of such explanation, the actuary would provide it by a reservation in reporting.

.13 The question, "Will an explanation enhance the user's understanding of the public personal injury compensation plans financial position or performance?" may help the actuary to identify such a situation. Unusual situations may include:

- Any significant changes to the relevant statute, strategic direction, or management policy, or any significant appeal decision that would likely change management policy or practice, since the prior calculation date and the consequent effect on the benefits liabilities;
- Any pending definitive or virtually definitive amendment, policy change, or change to administration practice, confirm whether or not such amendment or change has been reflected in the insurance contracts and other obligations or benefits liabilities;
- Subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, or, if there are no significant events of which the actuary is aware, include a statement to that effect;
- A major change in coverage status from self-insured to premium paying or vice versa and the actual or expected impact on the financial position and financial performance; and
- The circumstances affecting the work may result in a deviation from accepted actuarial practice in Canada. For example, the applicable legislation or the terms of the engagement may require that the actuary use a margin for adverse deviations that is outside the range that the actuary considers appropriate, or require that the actuary exclude the benefits liabilities in respect of certain claims, such as occupational disease claims. In such case, the actuary would disclose such deviation in the report.

**Consistency across financial reporting periods**

.14 Financial statements usually present results for one or more preceding financial reporting periods in comparison to those for the current period. Meaningful comparability requires the financial statement items for the various periods to be consistent, which can be achieved by the restatement of preceding period items that were previously reported on a basis which was inconsistent with that for the current period. A less desirable alternative to restatement is disclosure of the inconsistency.

.15 A change in the method of valuation creates an inconsistency. A change in the assumptions for valuation reflecting a change in the expected outlook does not constitute an inconsistency although, if its effect is material, then fair presentation would require its disclosure.

.16 A change in assumptions that results from the application of new standards may create an inconsistency.

**Communication with the auditor**

.17 Communication with the auditor is desirable at various stages of the actuary's work. These include

- Use of work in accordance with the Joint Policy Statement;
- The drafting of common features in the auditor's report and actuary's report;
- The drafting of a report with reservations;
- The presentation of the insurance contracts liabilities and other obligations; and
- The treatment of subsequent events.

**Standard reporting language**

.18 The standard reporting language is as follows:

**Actuary's Report**

An external user report for work pursuant to Subsections 2820 and 2830 should provide the following six statements of opinion, all in the same section of the respective report:

- A statement regarding data, which would usually be, "In my opinion, the data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding assumptions, which would usually be, "In my opinion, the assumptions are appropriate for the purpose of the valuation.";
- A statement regarding methods, which would usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose of the valuation.";
- A statement regarding conformation, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada."; and
- For valuations under subsection 2820, include a statement regarding appropriateness, which would usually be, "In my opinion, the [amount of insurance contracts liabilities] make appropriate provision for all personal injury compensation obligations given the plan's accounting."; or
- For valuations under subsection 2830, include a statement regarding appropriateness, which would usually be, "In my opinion the [amount of benefits liabilities and estimated funding requirements] make appropriate provision for all personal injury compensation obligations given the plan's funding policy.". [Effective January 1, 2023]

.19 The language in square brackets is variable and other language may be adjusted to conform to interim financial statements and to the terminology and presentation in the financial statements.

.20 An auditor's report usually accompanies the financial statements. Uniformity of common features in the two reports will avoid confusion to readers of the financial statements. Those common features include

- Addressees: Usually, the actuary addresses the report to the Board of Directors.
- Years referenced: Usually, the actuary's report refers only to the current year, even though financial statements usually present results for both the current and prior years.
- Report date: If the two reports have the same date, then they would take account of the same subsequent events.

**Reservations in reporting**

.21 The examples that follow are illustrative and not exhaustive.

**New appointment**

.22 A new actuary who is unable to use the predecessor actuary's work, but who has no reason to doubt its appropriateness, would modify the standard reporting language as follows:

> I have valued the insurance contracts liabilities of [the PPICP] for its financial statements at [31 December xxxx] and, except as noted in the following paragraph, their change in the statement of financial performance for the year then ended in accordance with accepted actuarial practice in Canada, including selection of appropriate assumptions and methods.
>
> The insurance contracts liabilities at [31 December xxxx-1] were valued by another actuary who expressed a favourable opinion without reservation, as to their appropriateness.
>
> In my opinion, the amount of insurance contracts liabilities, is appropriate and the financial statements fairly present the results of the valuation. For the reason stated in the previous paragraph, I am unable to say whether or not those results are consistent with those for the preceding year.

.23 If the actuary doubts the appropriateness of the predecessor actuary's work as a result of a review of it, then the actuary would consider additional disclosure about the reasons underlying the reservation.

**Impracticality of restatement**

.24 The actuary would, if necessary, restate the preceding year valuation to be consistent with the current year valuation. If it is not practical to restate the preceding year valuation, then the actuary would modify the opinion paragraph in the standard reporting language as follows:

> In my opinion, the amount of insurance contract liabilities is appropriate. As explained in Note [XX], the method of valuation for the current year is inconsistent with that for the previous year. Except for that lack of consistency, in my opinion the financial statements fairly present the results of the valuation.

Note [XX] would usually explain the change in the basis of valuation, explain the impracticality of applying the new basis retroactively, and disclose the effect of the change on the opening financial position at the end of the preceding year.

# 3000 – Pension Plans

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# 3100 Scope

.00 Part 1000 applies to work within the scope of this part 3000.

.01 The standards in part 3000 apply as follows:

- Section 3200 applies to advice that an actuary provides regarding the funded status or funding of a pension plan, except where such advice is with respect to:
  - The wind-up, in full or in part, of a pension plan; or
  - The financial reporting of a pension plan's costs and obligations in the employer's or the pension plan's financial statements;
- Section 3300 applies to advice that an actuary provides on the funded status or funding with respect to the wind-up, in full or in part, of a pension plan;
- Section 3400 applies to advice that an actuary provides with respect to financial reporting of a pension plan's costs and obligations in the employer's or the pension plan's financial statements; and
- Section 3500 applies to advice that an actuary provides regarding the computation of commuted values in the circumstances described in subsection 3510.

The wind-up of a pension plan involves the settlement of plan benefits and distribution of all plan assets. The cessation of benefit accruals or termination of a plan, not involving the settlement of plan benefits and distribution of plan assets, would not constitute a plan wind-up.

.02 The standards in sections 3200 through 3400 apply to advice with respect to a pension plan, including any arrangement that provides retirement income to its members, whether funded or not, whether registered or not, and whether in the private or public sector, except for:

- A defined contribution pension plan (noting that the standards do apply, however, to any pension plan that is a hybrid of a defined contribution pension plan and a defined benefit pension plan);
- A pension plan whose benefits are all guaranteed by a life insurer; and
- Social security programs such as the Canada Pension Plan, Québec Pension Plan, and the pension provided by the federal Old Age Security Act.

# 3200 Advice on the Funded Status or Funding of a Pension Plan

.01 This section 3200 applies to advice that an actuary provides regarding the funded status or funding of a pension plan, except where such advice is with respect to:

- The wind-up, in full or in part, of a pension plan; or
- The financial reporting of a pension plan's costs and obligations in the employer's or the pension plan's financial statements.

## 3210 General

.01 The actuary's advice on the funded status or funding of a pension plan should take account of the circumstances affecting the work. [Effective February 1, 2018]

.02 The actuary should select an actuarial cost method that is consistent with the circumstances affecting the work. [Effective February 1, 2018]

.03 The actuary should select an asset valuation method that is consistent with the circumstances affecting the work. [Effective February 1, 2018]

.04 The actuary's advice on the funded status of a pension plan should take account of the pension plan's benefits at the calculation date, except that the actuary's advice may anticipate a pending amendment to the pension plan that increases the value of its benefits. [Effective December 31, 2010]

.05 The actuary's advice on the funded status or funding of a pension plan should take account of expenses if they are expected to be paid from the pension plan's assets. [Effective December 31, 2010]

.06 The actuary's advice on the funded status or funding of a pension plan may, consistent with the circumstances affecting the work, take into account the value and the terms of a letter of credit of which the pension plan is the beneficiary. [Effective February 1, 2018]

.07 If the actuary is providing advice on funding:

- The actuary should determine the next calculation date, and
- The actuary's advice on funding should cover at least the period between the calculation date and the next calculation date. [Effective December 31, 2010]

**Circumstances affecting the work**

.08 For the purposes of section 3200, the circumstances affecting the work would include:

- Whether the actuary's advice relates to the funded status or the funding of the pension plan, or a combination thereof;
- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

.09 In the case of a pension plan registered under the Income Tax Act (Canada), the actuary would be familiar with guidance with respect to the funding of pension plans that has been published by an applicable regulatory authority.

.10 Advice on funding would include:

- A valuation to establish the amount of a letter of credit to secure the payment of pension plan benefits;
- Advice regarding an amount of assets to be earmarked, but not segregated, to a trust fund, to cover pension benefit commitments; and
- Advice on the funding implications of a plan amendment.

.11 The terms of an appropriate engagement may specify applicable objectives of funding, which may include a formal or informal funding policy. For example, the terms of an appropriate engagement for a pension plan registered under the Income Tax Act (Canada):

- May be limited to preparation of an external user report on the basis of applicable law including the minimum contributions required by law;
- May require the preparation of an external user report recommending contributions reflecting objectives of funding specified by the plan sponsor or plan administrator, as applicable, in addition to the requirements of law; and
- Where contributions are fixed, may require the preparation of an external user report reflecting objectives of funding specified by the plan administrator or other appropriate authority, as applicable in addition to the requirements of law.

.12 The terms of an appropriate engagement may specify the use of a particular actuarial cost method and/or a particular asset valuation method, consistent with these standards.

.13 Objectives of funding specified by the terms of an appropriate engagement may include considerations such as the security of benefits and related provisions for adverse deviations, the orderly and rational allocation of contributions among time periods, and/or inter-generational equity.

.14 Depending on the circumstances affecting the work, the actuary's advice on funding may describe a range of contributions.

**Actuarial cost methods**

.15 Actuarial cost methods include:

- Cost allocation methods, which allocate the actuarial present value of projected benefits among time periods, including attained age actuarial cost methods, entry age actuarial cost methods, aggregate actuarial cost methods, and individual level premium actuarial cost methods;
- Benefit allocation methods, which allocate a portion of the actuarial present value of projected benefits to a time period as a function of the change in accrued or projected benefits during the period, including the accrued benefit actuarial cost method, the unit credit actuarial cost method and the projected unit credit actuarial cost method; and
- Forecast actuarial cost methods, which allocate a portion of the actuarial present value of projected benefits to the forecast period based on:
    - The actuarial present value, at the calculation date, of projected benefits at the end of the forecast period including, if appropriate, benefits for those who are expected to become members between the calculation date and the end of the forecast period;

    minus

    - The actuarial present value of projected benefits at the calculation date;

    plus

    - The actuarial present value, at the calculation date, of benefits expected to be paid during the forecast period.

.16 When using a forecast actuarial cost method, the beginning and ending actuarial present value of projected benefits may be calculated from the perspective of either a hypothetical wind-up valuation or a going concern valuation.

**Asset valuation methods**

.17 The use of an asset valuation method that produces an asset value different from market value may be appropriate depending on the circumstances affecting the work. For example, the use of a smoothed asset value may be appropriate to moderate the volatility of contribution rates for purposes of advice on funding.

.18 The value of assets may be, subject to specific requirements for different types of valuation, any of:

- Their market value;
- Their market value adjusted to moderate volatility in investment returns;
- The present value of their cash flows after the calculation date; and
- Their value assuming a constant rate of return to maturity in the case of illiquid assets with fixed redemption values.

**Deferred recognition of pending amendment**

.19 If, at the calculation date, an amendment to the pension plan is definitive or virtually definitive:

- If the effective date of the amendment is during the period for which the report gives advice on funding, then the advice on funding up to the effective date may disregard the amendment, unless otherwise required by law, but the advice on funding after the effective date would take the amendment into account; or
- If the effective date of the amendment is after the period for which the report gives advice on funding, then the advice on funding may disregard the amendment unless otherwise required by law.

.20 The effective date of the amendment is the date at which the amended benefits take effect, as opposed to the date at which the amendment becomes either definitive or virtually definitive.

**Next calculation date**

.21 The next calculation date is the latest date for which the actuary considers the advice on funding to be applicable. The actuary would take into consideration the law and the terms of an appropriate engagement in determining the next calculation date.

## 3220 Types of Valuations

.01 When giving advice on the funded status or funding of a pension plan, the actuary should undertake one or more types of valuations that are consistent with the circumstances affecting the work. [Effective February 1, 2018]

**Types of valuations**

.02 There are different types of valuations that an actuary may undertake when giving advice on the funded status or funding of a continuing pension plan, the most common of which are:

- A going concern valuation;
- A hypothetical wind-up valuation; and
- A solvency valuation.

## 3230 Going Concern Valuation

.01 For a going concern valuation the actuary should:

- Assume that the plan continues indefinitely;
- Select either best estimate assumptions or best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, required by law or by the terms of an appropriate engagement; and
- Consider all benefits of which the actuary is aware, including contingent benefits, payable under the pension plan and should include provision for all such benefits expected to be paid while the plan is ongoing unless:
  - The law requires the valuation to exclude such benefits; or
  - The law permits the exclusion of such benefits and the terms of an appropriate engagement stipulate that the actuary exclude such benefits. [Effective February 1, 2018]

**Assumptions**

.02 For pension plans that are funded, in selecting the best estimate assumption for the discount rate, the actuary may either:

- Take into account the expected investment return on the assets of the pension plan at the calculation date and the expected investment policy after that date; or
- Reflect the yields on fixed income investments, considering the expected future benefit payments of the pension plan and the circumstances affecting the work.

.03 In establishing the discount rate assumption, the actuary would assume that there will be no additional returns achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy except to the extent that the actuary has reason to believe, based on relevant supporting data, that such additional returns will be consistently and reliably earned over the long term.

.04 If the plan is a "designated plan" as that term is defined in the Income Tax Regulations (Canada) and the purpose of the going concern valuation is to determine the maximum funding permitted by law, then the actuary would use assumptions stipulated by law for that purpose.

**Contingent benefits**

.05 An example of a contingent benefit relevant to a going concern valuation is a provision granting the employer or plan administrator the right to waive early retirement reductions to members retiring from active employment. In making provision for such a contingent benefit, the actuary would consider past experience, current circumstances and future expectations relating to the employer's or plan administrator's granting of such benefits.

**Benefits stipulated by law**

.06 If the plan is a "designated plan", as that term is defined in the Income Tax Regulations (Canada), and the purpose of the going concern valuation is to determine the maximum funding permitted by law, then the actuary would reflect the benefits stipulated by law for that purpose.

## 3240 Hypothetical Wind-up Valuation

.01 A hypothetical wind-up valuation determines the funded status of a pension plan on the assumption that the plan is wound up at the calculation date. The standards for a full wind-up valuation in section 3300 apply to a hypothetical wind-up valuation except for the external user report requirements therein and as superseded by the following recommendations. [Effective September 18, 2013]

.02 For a hypothetical wind-up valuation, the actuary should determine benefit entitlements on the assumption that the pension plan has neither a surplus nor a deficit. [Effective September 18, 2013]

.03 In determining the benefit entitlements, the actuary should postulate a scenario upon which the hypothetical wind-up valuation is based, taking account of the circumstances affecting the work. [Effective February 1, 2018]

.04 The actuary should take account of contingent benefits that would be payable under the postulated scenario for the hypothetical wind-up. [Effective September 18, 2013]

.05 For a hypothetical wind-up valuation, the actuary may assume that the wind-up date, the calculation date and the settlement date are coincident. [Effective September 18, 2013]

.05.1 For a hypothetical wind-up valuation, the actuary may assume that benefits would be settled by the purchase of annuities regardless of any limitation of capacity in the market for group annuity contracts. [Effective September 18, 2013]

.06 For a hypothetical wind-up valuation, the value of assets should be the market value of assets. [Effective September 18, 2013]

.07 For a hypothetical wind-up valuation, the actuary should select an explicit assumption for expenses expected to be payable from the pension plan's assets to wind up the pension plan. [Effective September 18, 2013]

**Membership data**

.08 The precision of the membership data is less critical for a hypothetical wind-up valuation than for an actual wind-up valuation.

.09 Since an actual wind-up is not occurring, pertinent membership data may not be available. The actuary would make appropriate assumptions regarding such missing membership data. For example, it may be appropriate to retroject current earnings based on aggregate historical pay increases in order to estimate final average earnings.

**Postulation of scenarios**

.10 There are often multiple scenarios regarding the circumstances that may result in the wind-up of a pension plan. For a hypothetical wind-up valuation, the actuary may postulate any reasonable, internally consistent, scenario regarding the circumstances resulting in the wind-up of a pension plan, consistent with the circumstances affecting the work. For the postulated scenario, the actuary would reflect the treatment of any contingent benefits, including:

- Those that are contingent upon the wind-up scenario, such as a plant closure benefit; or
- Those that are required by law, such as a provision for earlier commencement of deferred pension entitlements in the event of plan wind-up; and
- Those that are contingent upon a factor other than the wind-up scenario.

.11 Examples of contingent benefits that are dependent upon factors other than the wind-up scenario or as required by law are:

- A provision granting the employer or plan administrator the discretion to waive early retirement reductions; and
- A provision providing enhanced benefits if funds are sufficient.

**Subsequent events**

.12 The actuary may reflect subsequent events in the valuation provided that doing so either increases the actuarial present value of the projected benefits at the calculation date or reduces the value of the pension plan's assets at the calculation date.

**Wind-up expenses**

.13 Since the actuary would assume that the pension plan has neither a surplus nor a deficit, wind-up expenses related to the resolution of surplus or deficit issues need not be considered.

.14 In developing the assumption for expenses expected to be payable from the pension plan's assets to wind up the pension plan, the actuary would also make an assumption as to the solvency of the employer. The assumption with respect to the payment of expenses and the assumption with respect to the solvency of the employer would be consistent.

**Settlement Methods**

.15 A hypothetical wind-up valuation requires the actuary to select assumptions about the methods of settlement.

.16 The actuary may assume a settlement method permitted by law or any relevant regulatory policy or guideline.

.17 The actuary may assume settlement by means of a replicating investment portfolio if permitted by law or any regulatory policy or guideline, or where it is anticipated that annuities could not be purchased due to group annuity capacity limitations. The assumed replicating portfolio would provide for an appropriate level of security for the pension benefits covered.

.18 The actuary may incorporate assumptions as to the exercise of regulatory discretion, a change in law, or a plan amendment which would be required to enable a practical settlement of benefits. When making such assumptions, the actuary would consider any relevant regulatory policy, guidance, or precedent.

.19 For example, for a plan where pensions are indexed with the Consumer Price Index and where it is impractical to purchase annuities indexed with the Consumer Price Index, the actuary may assume that annuities would be purchased with indexing at a fixed percentage rate of comparable value to indexing in accordance with the plan provisions.

## 3250 Solvency Valuation

.01 A solvency valuation typically is a form of a hypothetical wind-up valuation required by law and the actuary should apply the standards for a hypothetical wind-up valuation unless:

- Otherwise required by law; or
- Otherwise permitted by law and stipulated by the terms of an appropriate engagement. [Effective December 31, 2010]

.02 Examples of exceptions permitted by law for the preparation of a solvency valuation under the law of certain jurisdictions include:

- Use of a value of assets other than market value;
- Use of one or more assumptions that are not best estimate assumptions; or
- Exclusion of certain benefits from the valuation.

## 3255 Other Valuations

.01 For a valuation that is not a going concern valuation, a hypothetical wind-up valuation, or a solvency valuation, the actuary should select actuarial methods and actuarial assumptions that are consistent with the terms of an appropriate engagement. [Effective December 30, 2012]

.02 To the extent that a valuation is not a going concern valuation, hypothetical wind-up valuation, or solvency valuation, but has characteristics similar to one or more of these types of valuations, the actuary would consider any relevant standards for these types of valuations in undertaking the work.

.03 For example, a valuation for determining the required amount of a letter of credit for a supplemental plan is typically similar to a hypothetical wind-up valuation, but with the actuarial methods and actuarial assumptions stipulated by the terms of the engagement. In such circumstances, the actuary would consider the relevant standards for hypothetical wind-up valuations in undertaking the work.

## 3260 Reporting: External User Report

.01 An external user report on work pursuant to section 3200 should:

- Include the calculation date, the report date, and the next calculation date;
- Describe the sources of membership data, plan provisions, and the pension plan's assets, and the dates at which they were compiled;
- Describe the membership data and any limitations thereof;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Describe the assets, including their market value and a summary of the assets by major category;
- Describe the pension plan's provisions, including the identification of any pending definitive or virtually definitive amendment;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, or, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- State the type of each valuation undertaken under the terms of the appropriate engagement; and
- Describe any significant terms of the appropriate engagement that are material to the actuary's advice. [Effective February 1, 2018]

.02 For each going concern valuation undertaken by the actuary, the external user report should:

- Describe the rationale for any assumed additional returns, net of investment management expenses, from an active investment management strategy as compared to a passive investment management strategy, included in the discount rate assumption;
- Report the funded status at the calculation date and the service cost or the rule for calculating the service cost between the calculation date and the next calculation date;
- Disclose any pending but definitive or virtually definitive amendment of which the actuary is aware, and whether or not such amendment has been included in determining the funded status and the service cost;
- Describe any contingent benefits provided under the pension plan and the extent to which such contingent benefits are included or excluded in determining the funded status and the service cost;
- Describe any benefits that are not contingent benefits and that have been excluded in determining the funded status and the service cost; and
- If there is no provision for adverse deviations, include a statement to that effect. [Effective March 31, 2015]

.03 If an external user report includes one or more going concern valuations then the external user report should, for at least one such valuation included in the report, describe and quantify the gains and losses between the prior calculation date and the calculation date, unless the going concern valuation is based on an extrapolation of results disclosed in a previous external user report. [Effective March 1, 2019]

.04 Repealed

.05 For each hypothetical wind-up valuation and solvency valuation undertaken by the actuary, the external user report should:

- Describe the basis for inclusion and the amount considered in respect of a letter of credit of which the pension plan is the beneficiary;
- Report the funded status at the calculation date;
- Include a description of the postulated scenario; and
- Include a description of the extent to which contingent benefits provided under the pension plan are included or excluded in determining the funded status. [Effective March 31, 2015]

.06 Repealed

.06.1 For each valuation that is not a going concern valuation, a hypothetical wind-up valuation, or a solvency valuation, the external user report should:

- Include a description of the extent to which contingent benefits provided under the pension plan are included or excluded. [Effective March 31, 2015]

.06.2 If an external user report includes one or more going concern valuations then the external user report should, for at least one such valuation included in the report, report the effects of using a discount rate 1.0% lower than that used for the valuation on:

- The actuarial present value, at the calculation date, of projected benefits allocated to periods up to the calculation date; and
- The service cost or the rule for calculating the service cost between the calculation date and the next calculation date;

unless

- The purpose of the valuation is the determination of the maximum funding permitted by law for a "designated plan", as that term is defined in the Income Tax Regulations (Canada); or
- The going concern valuation is for a pension plan which is not registered under a pension benefits standards act of a province or the federal government of Canada; or
- The going concern valuation is based on an extrapolation of results disclosed in a previous external user report. [Effective March 1, 2019]

.06.3 If an external user report includes one or more hypothetical wind-up valuations or solvency valuations then, for any one such hypothetical wind-up valuation or solvency valuation, the external user report should:

- Report the incremental cost between the calculation date and the next calculation date, in respect of the defined benefit portion of the plan;
- If the external user report does not include a going concern valuation, report the service cost or the rule for calculating the service cost between the calculation date and the next calculation date in respect of the defined contribution portion of the plan;
- Report the effect on the hypothetical wind-up or solvency liabilities, at the calculation date, of using a discount rate 1.0% lower than that used for the valuation; and
- If the external user report does not include a going concern valuation, describe and quantify the gains and losses between the prior calculation date and the calculation date;

unless

- The pension plan is a "designated plan" which has, as members, only persons "connected" with the employer as those terms are defined in the Income Tax Regulations (Canada); or
- The hypothetical wind-up valuation or solvency valuation is for a pension plan which is not registered under a pension benefits standards act of a province or the federal government of Canada; or
- The hypothetical wind-up valuation or solvency valuation is based on an extrapolation of results disclosed in a previous external user report. [Effective March 1, 2019]

.06.4 Where contributions are fixed or restricted by the terms of the pension plan or other governing documents, and the actuarial certification of the funding of the plan in accordance with the law or any regulatory policy or guideline is directly dependent on the results of a stochastic funding model regarding the adequacy of the contributions to the plan to sustain one or more target levels of benefits from the plan, the report should disclose the stochastic funding model results which are relevant to the provision of the actuarial certification. [Effective March 1, 2019]

**Plausible adverse scenarios**

.06.5 A plausible adverse scenario would be a scenario of adverse but plausible assumptions, relative to the best estimate assumptions otherwise selected for the valuation, about matters to which the pension plan's financial condition is sensitive. Plausible adverse scenarios vary among pension plans and may vary over time for a particular pension plan.

.06.6 If an external user report includes one or more going concern valuations, then the actuary should consider threats to the pension plan's future financial condition under plausible adverse scenarios that include, where appropriate, the following risks:

- Interest rate risk, the potential that interest rates will be lower than expected;
- Deterioration of asset values;
- Longevity risk, the potential that pension plan members will live longer than expected;
- For pension plans where contributions are fixed or restricted by the terms of the plan or other governing documents, the potential that the contribution base will be lower than expected;

unless

- The pension plan is a "designated plan" which has, as members, only persons "connected" with the employer as those terms are defined in the Income Tax Regulations (Canada); or
- The valuation is for a pension plan which is not registered under a pension benefits standards act of a province or the federal government of Canada; or
- The valuation is based on an extrapolation of results disclosed in a previous external user report. [Effective March 1, 2019]

.06.7 In considering the plausible adverse scenarios, the actuary may:

- Make reasonable determinations of the asset classes which are classified as fixed income investments;
- Restrict the impact of interest rate risk to the asset classes deemed to be fixed income investments and to the discount rate to the extent that the discount rate is affected by fixed income investments;
- Assess the impact of the risks in combination, but the actuary would not be required to do so;
- Reflect the impact of any compensating adjustments, such as a potential reduction in any margin implicit in the discount rate in response to a lower interest rate scenario;
- Reference any related work, such as asset-liability modelling work, with which the actuary has been involved or which has otherwise been made available to the actuary.

.06.8 If an external user report includes one or more going concern valuations, then the external user report should, for at least one such valuation included in the report, report the effects on:

- The funded status of the plan on a market value or smoothed value basis at the calculation date, separating the effects on assets and liabilities, where applicable; and
- The service cost or the rule for calculating the service cost between the calculation date and the next calculation date;

of the plausible adverse scenarios selected by the actuary for the risk assessments under paragraph 3260.06.6. [Effective March 1, 2019]

.07 An external user report that provides advice on funding should:

- Describe the determination of contributions or a range of contributions between the calculation date and the next calculation date;
- If contributions are fixed by the terms of the plan or other governing documents, then either:
  - Report that the contributions are adequate to fund the pension plan in accordance with the law; or
  - Report that the contributions are not adequate to fund the pension plan in accordance with the law; and
    - Describe the contributions required to fund the pension plan adequately in accordance with the law;
    - Describe one or more possible ways in which benefits may be reduced such that the contributions would be adequate to fund the pension plan in accordance with the law; or
    - Describe a combination of increases in contributions and reductions in benefits that would result in the funding being adequate to conform to the law. [Effective December 30, 2012]

.08 An external user report should provide the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement as to assumptions, which should usually be, "In my opinion, the assumptions are appropriate for the purpose(s) of the valuation(s).";
- A statement as to methods, which should usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose(s) of the valuation(s)."; and
- A statement as to conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective December 30, 2012]

.09 An external user report should be sufficiently detailed to enable another actuary to assess the reasonableness of the valuation. [Effective December 30, 2012]

**Membership data**

.10 Any assumptions and methods used in respect of insufficient or unreliable membership data would be described.

.11 The actuary may describe limitations on the tests conducted in the review of the data which has been determined to be sufficient and reliable for purposes of the valuation(s). For example, the actuary may describe that the data tests will not capture all possible deficiencies in the data and reliance is also placed on the certification of the plan administrator as to the quality of the data.

**Types of valuations**

.12 The external user report may provide information with respect to multiple valuations, but would, as a minimum:

- If the pension plan is a registered pension plan and is not a "designated plan", as that term is defined in the Income Tax Regulations (Canada), provide information with respect to:
  - A going concern valuation, if mandated by law or specified by the terms of an appropriate engagement;
  - A hypothetical wind-up valuation under the scenario regarding the circumstances resulting in the wind-up that, subject to paragraph 3260.19, maximizes the wind-up liabilities, unless the pension plan and the law do not define the benefits payable upon wind-up; and
  - Any other hypothetical wind-up or solvency valuation mandated by law;
- If the pension plan is a "designated plan" as that term is defined in the Income Tax Regulations (Canada), provide information with respect to:
  - A going concern valuation, if mandated by law or specified by the terms of an appropriate engagement;
  - A hypothetical wind-up valuation under the scenario regarding the circumstances resulting in the wind-up that, subject to paragraph 3260.19, maximizes the wind-up liabilities, unless the pension plan and the law do not define the benefits payable upon wind-up or the plan has, as members, only persons "connected" with the employer as that term is defined in the Income Tax Regulations (Canada); and
  - Any other hypothetical wind-up or solvency valuation mandated by law;

and

- If the pension plan is not a registered pension plan, include information with respect to the types of valuations required by the circumstances affecting the work.

**Significant terms of appropriate engagement**

.13 Significant terms of the appropriate engagement may include matters like:

- The use of a specified actuarial cost method;
- The use of a specified asset valuation method;
- The exclusion of benefits for purposes of a valuation, as permitted by law;
- The extent of margins for adverse deviations, if any, to be included in selecting assumptions;
- A policy to fund only the minimum contributions required by law; and
- Specified methodology for the determination of contribution requirements in excess of the requirements of law.

**Service cost**

.13.1 For a plan that is a hybrid of a defined contribution pension plan and a defined benefit pension plan, the service cost for a going concern valuation would include the service cost in respect of both the defined contribution portion of the plan and the defined benefit portion of the plan.

**Reporting gains and losses**

.14 The reported gains and losses for a going concern valuation would include the gain or loss due to a change in the actuarial cost method or a change in the method for valuing the assets and each significant change in assumptions and plan provisions determined at the calculation date. If an amendment to the pension plan prompts the actuary to change the assumptions, the actuary may report the combined effect of the amendment and the resultant change in assumptions.

**Discount rate sensitivity**

.15 When following the recommendations to illustrate the effect of a change in discount rate on a valuation, the actuary would maintain all other assumptions and methods as used in the underlying valuation.

**Incremental cost**

.15.1 The incremental cost for a hypothetical wind-up valuation or a solvency valuation represents the present value, at the calculation date, of the expected aggregate change in the hypothetical wind-up liability or solvency liability between the calculation date and the next calculation date, increased for expected benefit payments between the calculation date and the next calculation date.

**Methods**

.16 For each valuation included in the external user report for which there was a prior valuation, the description of the actuarial cost method would include a description of any change to the actuarial cost method used in the prior valuation and the rationale for such change.

.17 For each valuation included in the external user report for which there was a prior valuation, the description of the method to value the assets would include a description of any differences in change to the asset valuation method used in the prior valuation and the rationale for such change.

**Assumptions**

.18 For each valuation included in the external user report for which there was a prior valuation, the description of assumptions would include a description of each change to the assumptions from the assumptions used in the prior valuation.

.18.1 When describing the assumptions for methods of settlement for a hypothetical wind-up or solvency valuation, the actuary would describe any related limitations. For example:

- If the settlement method assumes that annuities would be purchased but it might not be possible to purchase annuities on actual wind-up of the plan due to capacity limitations; or
- If the settlement method assumes the exercise of regulatory discretion, a change in law, or a plan amendment for which there is no specific authority.

**Scenario that maximizes wind-up liabilities**

.19 In reporting the funded status of the pension plan under the scenario regarding the circumstances resulting in the wind-up that maximizes the wind-up liabilities, the actuary would include benefits that are contingent upon the scenario regarding the circumstances resulting in the wind-up or mandated by law. However, the actuary may disregard:

- Benefits that are contingent upon a factor other than the scenario regarding the circumstances resulting in the wind-up or as mandated by law; and
- Possible plan member earnings after the calculation date.

**Other types of valuations**

.19.1 Valuations that are not going concern valuations, hypothetical wind-up valuations, or solvency valuations are usually similar in nature to one of these three types of common valuations. In preparing the external user report for such a valuation, the actuary would consider the relevant reporting requirements for a type of valuation similar to the valuation undertaken and would include additional disclosures as appropriate.

**Statements of opinion**

.20 Where different statements of opinion apply in respect of different purposes of the valuation, the above requirements may be modified but would be followed to the extent practicable.

.21 While a separate statement regarding assumptions would generally be included in respect of each purpose of the valuation, the statements regarding assumptions may be combined where the statements do not differ among some or all of the valuation's purposes. The report would indicate clearly which statement regarding assumptions applies to each of the valuation's purposes.

.22 While a separate statement regarding methods would generally be included in respect of each purpose of the valuation, the statements regarding methods may be combined where the statements do not differ among some or all of the valuation's purposes. The report would indicate clearly which statement regarding methods applies to each of the valuation's purposes.

## 3270 Disclosure for Stochastic Models Used to Comply with Specific Regulatory Pension Plan Funding Requirements

**Purposes**

.23 For a statutory funding valuation that specifically requires the use of stochastic models to comply with pension plan funding requirements in accordance with the law or any regulatory policy or guideline, the disclosure of model inputs and outputs are meant to

- Assist the users of the report or work product to understand the assumptions and methods used in the model and the distribution of outcomes from the model; and
- Enable another actuary to assess whether the assumptions and methods used in the model and the distribution of outcomes from the model are reasonable.

**Model Inputs**

.02 The actuary reporting on the results of a statutory funding valuation using stochastic models for the purposes of complying with specific regulatory pension plan funding requirements (e.g., under the New Brunswick Shared Risk Plans Regulation) should disclose the following model inputs:

- Risk management goals, funding policy, deficit recovery plan and funding excess utilization plan or other such policies that require contingent calculations, reflected in the stochastic analysis;
- Number of scenarios and time period over which the scenarios are forecast;
- Methodology used in the stochastic modelling, including the approach to interest rate forecasting and development of the funding liability discount rate;
- Projected experience decrement assumptions and whether or not these are deterministic or stochastic. If the latter, the volatility for the decrements and a description of the model used to simulate scenarios;
- Future valuations' decrement assumptions, if applicable;
- Assumptions for the new entrants into the plan, including population growth assumption and new entrant profiles;
- Methodology for wage increases, if relevant, including increases in the year's maximum pensionable earnings and the defined benefit limit prescribed under the *Income Tax Act (Canada)*;
- Frequency of valuations over the projection period;
- Anticipated expenses charged to the pension fund, broken down separately into
    - Administration expenses (including actuarial, audit, legal, etc.); and
    - Investment management fees, to the extent they are not already reflected in the return assumptions;
- Confirmation of how the discount rate used in valuing the liabilities is affected by the economic scenario. For example, if the discount rate is linked to long-term corporate bond yields, confirmation that the discount rate is adjusted to be consistent with the forecasted scenario, and a description of how that adjustment is made;

- Rationale for any variance in and any relationships among the equity returns, inflation, bond yields, or other economic variables;
- Description of any methodology to vary the standard deviations of and correlations among economic variables;
- For the federal bond yield curve, the initial yield at one-year, 10-year, and 30-year terms;
- The initial credit spreads for provincial and investment-grade corporate bonds at the one-year, 10-year, and 30-year terms, if applicable; and
- The rationale for any trend in bond yields (including any assumption of normalization of the yield curve). [Effective July 1, 2019]

.03 For each of the model inputs listed above, the actuary would indicate material changes and reasons for changes relative to the previous valuation.

**Model Outputs**

.04 To assist users of the report to understand the model outputs and assess their reasonableness, the following summary of forecasted economic variables should be disclosed as a minimum:

- For inflation and all asset class returns (and wage increases if they incorporate a stochastic component different than inflation):
  - Mean of the annualized compounded value over the entire period;
  - Average annual standard deviation; and
  - Average correlation matrix among these variables over the entire period.
- For the federal bond yield curve, the mean yield at the end of the projection period at the one-year, 10-year, and 30-year terms;
- The mean credit spread for provincial and investment-grade corporate bonds at the end of the projection period at the one-year, 10-year, and 30-year terms, if applicable;
- For at least every other year over the first 10 years and at least every five years thereafter, the following distribution information for the total portfolio return after investment management fees:
  - Percentiles 5%, 25%, 50%, 75%, 95%, mean, and standard deviation; and
- The initial discount rate and mean of the discount rate at the end of the projection period. [Effective July 1, 2019]

.05 The following average forecasted key demographic summary statistics should be disclosed at a minimum of every other year for the first 10 years and every five years thereafter:

- Total number of active participants and their average age, average service, and average projected salary, if relevant;
- Total number of inactive members and the total amount of annual pensions being paid; and
- Mean total liability and active/inactive liability split. [Effective July 1, 2019]

.06 The actuary should provide the following statistics for the projected liability, projected assets, projected funded status, and any other key output from the model upon which the actuary expresses an opinion (e.g., open group funded ratio):

- Percentiles 5%, 25%, 50%, 75%, 95%;
- Mean;
- The average of those values that are below the 5th percentile of the range of values produced by the entire set of modelled scenarios or above the 95th percentile, according to which side of the distribution should be considered unfavorable. As an example, values below the 5th percentile should be expected to be used for value of assets and funded status, whereas values above the 95th percentile should be expected to be used for liabilities; and
- The corresponding average for the values below the 2.5th or above the 97.5th percentile.

These statistics should be provided as a minimum for every other year for the first 10 years and every five years thereafter. [Effective July 1, 2019]

**Disclosure Statements**

.07 The actuary signing a report on the stochastic modelling should include the following statements:

- While the actuary believes that the model inputs are reasonable at the time this report has been prepared, other reasonable model inputs could be used, resulting in potentially very different distributions of forecasted outcomes; and
- The disclosures in this report have been prepared in compliance with Subsection 3270, Disclosure for Stochastic Models Used to Comply with Specific Regulatory Pension Plan Funding Requirements. [Effective July 1, 2019]

.08 The actuary signing a funding report requiring stochastic modelling should provide the following statement, with appropriate reference to any separate stochastic modelling report:

- The funding valuation assumptions are consistent with the stochastic model inputs. [Effective July 1, 2019]

# 3300 Full or Partial Wind-up Valuation

.01 This section 3300 applies to advice that an actuary provides on the funded status or funding with respect to the wind-up, in full or in part, of a pension plan.

## 3310 General

.01 The actuary's advice with respect to a pension plan that is being wound-up, in full or in part, should take account of the circumstances affecting the work. [Effective February 1, 2018]

.02 The actuary should take account of subsequent events up to the cut-off date. [Effective December 31, 2010]

.03 The pension plan's assets should be valued at liquidation value. [Effective December 31, 2010]

**Scope**

.04 This section is not intended to prescribe the manner in which:

- The pension plan's assets would be allocated between jurisdictions in the case of wind-up of a pension plan covering members in several jurisdictions;
- Benefit entitlements would be determined;
- Contributions to a pension benefits guarantee fund would be determined;
- Funding obligations would be determined; or
- The pension plan's assets would be allocated between the employer and the members or between members themselves.

.05 Rather, those issues would be determined in accordance with the law or the plan provisions, or an entity empowered thereunder to make that determination. It may be appropriate, however, to use the results of the valuation to address one or more of those issues, or to disclose their resolution in the report.

**Circumstances affecting the work**

.06 For the purposes of section 3300, the circumstances affecting the work would include:

- Whether the actuary's advice relates to the funded status or the funding of the pension plan, or a combination thereof;
- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

**Cut-off date**

.07 The cut-off date would be the date up to which subsequent events would be recognized in the valuation.

**Partial wind-up**

.08 A partial wind-up occurs when a subset of the members terminates membership in circumstances that require wind-up with respect to those members. Such wind-up does not apply to the continuing members, although it may be necessary, for legal or other reasons, also to value the benefits of the continuing members.

.09 The law regarding partial wind-ups varies by jurisdiction. As a result, the application of law can cause a partial wind-up to range from an insignificant change in the pension plan to something similar to a full wind-up.

.10 The standards for a partial wind-up are the same as the standards for a full wind-up. Their application may be easier, however, when the partial wind-up applies to relatively few members. For example:

- The standard of materiality for determination of benefit entitlements may be less rigorous for continuing members than for those to whom the partial wind-up applies; or
- The standard of materiality for reporting wind-up expenses may be less rigorous.

## 3320 Assumptions

.01 The actuary should select assumptions that:

- Are either best estimate assumptions or are best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, required by law or by the terms of an appropriate engagement;
- Are selected as at the cut-off date; and
- Reflect the expected method of benefit settlement. [Effective February 1, 2018]

.02 Unless it is expected that expenses will not be paid from the pension plan's assets, the actuary should select an explicit assumption regarding the expenses of wind-up and either offset the resulting expense provision against the pension plan's assets or add the resulting expense provision to the pension plan's liabilities. [Effective December 31, 2010]

## 3330 Reporting: External User Report

.01 If a previous external user report was prepared with respect to the wind-up, the actuary should describe and quantify the gains and losses between the prior calculation date and the calculation date. [Effective December 30, 2012]

.02 An external user report should:

- Include the wind-up date, the calculation date, the cut-off date, and the report date;
- Describe the events precipitating the wind-up, of which the actuary is aware, that affect the terms of the wind-up, the benefit entitlements, or the valuation results;
- Describe the sources of membership data, plan provisions, and the pension plan's assets, and the dates at which they were compiled;
- Describe the membership data, including any assumptions made about missing membership data;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Subject to any applicable privacy legislation:
  - Include the detailed individual membership data; or
  - Include an offer to provide detailed individual membership data on request to the employer, the plan administrator, or the regulator;
- Describe the liquidation value of the assets and a summary of the assets by major category;
- Describe the pension plan's provisions, including an identification of
  - Any benefits that have been insured;
  - Any amendments made since any previous external user report with respect to the plan which affect benefit entitlements; and
  - Any subsequent events or post-wind-up contingencies, of which the actuary is aware, which affect benefit entitlements;
- Report the explicit assumption regarding the expenses of wind-up or justify the expectation that expenses will not be paid from the pension plan's assets;

- Report the funded status at the calculation date;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work and, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- State that the funded status at settlement may differ from that contained in the report unless the report includes the funded status at the time of final settlement;
- State whether an updated report will be required in the future;
- If the actuary relies upon direction concerning unclear or contentious issues,
  - Describe each such issue;
  - Describe the direction relied upon or, where appropriate, a summary thereof; and
  - Identify the person providing such direction and the basis of authority of such person;
- Describe any post-wind-up contingencies that may affect the distribution of the pension plan's assets;
- Describe whether a recalculation of the value of benefit entitlements is required at settlement;
- Where a member has a choice that the member has not yet made between receiving a commuted value and a deferred or immediate pension, describe the assumptions made regarding such choice;
- If applicable, describe the method to allocate the pension plan's assets among classes of members and the method to distribute surplus;
- Describe the actuary's role in calculating commuted values, the standards for their calculation, and an opinion on whether their calculation is in accordance with accepted actuarial practice in Canada; and
- Describe the sensitivity of the valuation results to the pension plan's investment policy and to market conditions between the report date and the settlement date. [Effective March 31, 2015]

.03 An external user report should provide the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding assumptions, which should usually be, "In my opinion, the assumptions are appropriate for the purpose(s) of the valuation(s).";
- A statement regarding methods, which should usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose(s) of the valuation(s)."; and
- A statement regarding conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective December 30, 2012]

.04 The external user report should be sufficiently detailed to enable another actuary to assess the reasonableness of the valuation. [Effective December 30, 2012]

**Dates**

.05 The wind-up date of the pension plan would be determined by the regulator, the plan administrator or the plan sponsor based on the plan provisions and the law.

.06 The calculation date of the funded status would usually be the wind-up date.

.07 For a particular member:

- The date of calculation of benefit entitlement would depend on the circumstances of the wind-up, the terms of the pension plan, and the law, and may be the date of termination of employment, the date of termination of membership, the wind-up date, or another date; and
- The settlement date would be the date of settlement of the member's benefit entitlement.

**Nature of wind-ups**

.08 The purpose of a wind-up valuation may be to determine, or to provide, the basis for determining:

- The funded status of the pension plan;
- The total value of the benefit entitlements of all members prior to taking account of the funded status of the pension plan;
- Any required additional funding;
- The amounts and methods of settlement of benefit entitlements, including any adjustment required due to a wind-up deficit; or
- The amount and method of distribution of a wind-up surplus.

.09 A wind-up may be complex and may take a long time. Delays may require a series of reports by the actuary. Since the funded status of the pension plan at the final settlement date may affect whether benefit entitlements can be settled in full, the reflection of subsequent events in each report would be critical.

.10 For example, between the wind-up date and the settlement date:

- The wind-up liabilities may fluctuate if there are fluctuations in interest rates and annuity prices;
- The pension plan's assets may fluctuate depending upon the manner in which they are invested; and
- The surplus may fluctuate if the pension plan's assets and liabilities are not matched.

.11 The actuary would usually report the value of the benefit entitlements of all members and the funded status of the pension plan. That report would be filed with the regulator for approval. After that approval, the plan administrator would settle the benefit entitlements.

.12 The actuary may prepare, or may be required to prepare, a final report after settlement of all benefit entitlements. Such report, if any, would document the distribution of the pension plan's assets by describing those entitlements and their settlement.

**Membership data**

.13 The membership data are the responsibility of the plan administrator. The actuary would, however, report on the sufficiency and reliability of the membership data, specifically including the commuted values used in the valuation whether or not the plan administrator was the calculator thereof.

.14 The finality of wind-up would call for the actuary to obtain precise membership data. The actuary may, if the circumstances dictate, include contingency reserves in the wind-up valuation with respect to missing members if the actuary believes that additional members still have benefit entitlements under the pension plan but their membership information is missing.

.15 The reported membership data would include details of the amounts and terms of payment of each member's benefits.

**Assumptions**

.16 The selected assumptions would:

- In respect of benefit entitlements that are assumed to be settled by purchase of annuities, reflect single premium annuity rates;
- In respect of benefit entitlements that are assumed to be settled by lump sum transfer, reflect the standards in section 3500 respecting commuted values; and
- In respect of benefit entitlements that are assumed to be settled in some other manner, reflect the manner in which such benefits would be settled.

.17 If future benefits depend on continued employment (e.g., the pension plan is terminating but employment is not), the actuary would consider reflecting contingencies such as future salary increases and termination of employment.

.18 If the pension plan provides special early retirement allowances that may be reduced if the members have employment income following their actual or assumed early retirement dates, then the wind-up valuation would require assumptions regarding the likelihood and the amounts of the members' future employment income. To extrapolate the pension plan's historical experience as a going concern would not necessarily be appropriate in selecting those assumptions.

.19 Wind-up expenses usually include, but are not limited to:

- Fees related to the actuarial wind-up report;
- Fees imposed by a regulator;
- Legal fees;
- Administration expenses; and
- Custodial and investment management expenses.

.20 The actuary would either net wind-up expenses against the pension plan's assets or add the assumed wind-up expenses to the pension plan's liabilities in calculating the ratio of assets to liabilities as a measure of financial security of the benefit entitlements, unless the expectation is that expenses will not be paid from the pension plan's assets. However, an exception may be made for future custodial and investment management expenses, which may be netted against future investment return in the treatment of subsequent events.

**Use of another person's work**

.21 Some aspects of the wind-up may be unclear to the actuary or contentious. Examples are:

- Interpretation of the law;
- The determination of the wind-up date;
- The members, former members or recently terminated members to be included in the wind-up;
- Whether or not to assume salary increases in determining benefit entitlements;
- Eligibility for plant closure benefits and permanent lay-off benefits;
- Eligibility for benefits payable only with the consent of the employer or plan administrator;
- The liquidation value of the pension plan's assets;
- The method to allocate the pension plan's assets among members;
- The allocation of surplus between the employer and the members; and
- Whether or not wind-up expenses are to be paid from the pension plan's assets.

.22 To decide those aspects, the actuary may rely upon direction from another person with the necessary knowledge, such as legal counsel or the employer, or the necessary authority, such as a regulator or the plan administrator. The actuary would consider any issues of confidentiality or privilege that may arise.

**Post-wind-up contingencies**

.23 Post-wind-up contingencies may affect benefit entitlements. Examples are:

- Member election of optional forms of benefits;
- Member election of retirement date;
- Salary increases; and
- Change in marital status.

**Subsequent events**

.24 In contrast with a going concern valuation, in a wind-up valuation all subsequent events, ideally, would be reflected. This ensures that the funded status is presented as fairly as possible as of the report date. However, it would be impossible to recognize subsequent events right up to the report date. Accordingly, the actuary would select a cut-off date that is close to the report date.

.25 The actuary would ascertain that no subsequent events have occurred between the cut-off date and the report date that would change the funded status significantly, otherwise the actuary would select a later cut-off date. For clarity, a subsequent event may be material yet not be so significant as to require selection of a later cut-off date.

.26 It may be appropriate to have more than one cut-off date. For example, the actuary may select one cut-off date for the active membership data and another cut-off date for the inactive membership data.

.27 Common subsequent events are:

- Contributions;
- Expenses paid from the pension plan's assets;
- Actual investment return on the pension plan's assets;
- Change in annuity purchase rates;
- Change in assumptions for the calculation of commuted values;
- Corrections to the membership data;
- Deaths of members; and
- Crystallization of post-wind-up contingencies.

.28 One method for taking account of subsequent events is to determine the value of benefits as of the cut-off date and then discount such value back to the calculation date at an interest rate equal to the rate of investment return, net of investment expenses, earned on the pension plan's assets between the calculation date and the cut-off date. The pension plan's assets would be determined at the calculation date, but adjusted for the subsequent events (such as contributions and non-investment expenses) that affect the pension plan's assets.

.29 There may be situations where, due to legal or practical considerations, subsequent events are not recognized, at least in a preliminary report and the cut-off date for such a report would be the calculation date. In such reports, the effect of subsequent events may be disclosed and quantified in an approximate manner. Where the effect of subsequent events is provided in a later report, it may be practical, in that report, to use a calculation date corresponding to the cut-off date.

**Statements of opinion**

.30 Where different statements of opinion apply in respect of different purposes of the valuation, the above requirements may be modified, but would be followed to the extent practicable.

# 3400 Financial Reporting of Pension Costs

.01 This section 3400 applies to advice that an actuary provides with respect to financial reporting of a pension plan's costs and obligations in the employer's or the pension plan's financial statements, where the calculations and advice are provided in accordance with an applicable financial reporting standard.

## 3410 General

.01 For financial reporting purposes, the actuary should use methods and assumptions for the value of assets and pension benefit obligations that are appropriate to the basis of financial reporting in the employer's or pension plan's financial statements, as applicable, and that are consistent with the terms of an appropriate engagement and the circumstances affecting the work. [Effective May 1, 2019]

**Circumstances affecting the work**

.01.1 For the purposes of section 3400, the circumstances affecting the work would include

- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

.02 The actuary would reflect the financial reporting standards specified by the terms of the appropriate engagement. Where financial reporting standards require methods and assumptions to be established by the preparers of the financial statements, the actuary would use the methods and assumptions specified by the preparers of the financial statements.

**Plan provisions**

.02.1 The actuary would determine the plan provisions with sufficient accuracy for the purposes of the valuation. Sources of information on plan provisions include, where relevant

- Current plan documents;
- Administrative practices;
- Cost-sharing arrangements; and
- Communication between the plan sponsor or plan administrator and the plan members or collective bargaining agent.

.02.2 The actuary would consider all benefits in accordance with the terms of the appropriate engagement that are to be payable under the pension plan and would include provision for all such benefits expected to be paid under the plan.

**Anticipated amendment or deferred recognition of a pending amendment**

.02.3 The actuary's advice on a pension plan may reflect an expected amendment to the plan if the amendment is definitive or virtually definitive, as appropriate, based on the applicable financial reporting standard.

.02.4 The effective date of the amendment is the date at which the amended benefits take effect, as opposed to the date when the amendment becomes either definitive or virtually definitive.

.02.5 If an actuary is aware of an expected amendment to the pension plan, but does not reflect the amendment in the work, then the actuary would report the event in accordance with the requirements for the disclosure of subsequent events.

**Data**

.02.6 In identifying the data need, the actuary would bear in mind the pertinent benefits (i.e., those applicable during retirement, disability, or following termination of employment).

.02.7 The actuary may use data, including membership data, with an effective date different from the calculation date. In extrapolating data or results, the actuary would consider actual benefit payments and other relevant events between the effective date of the data and the calculation date. The actuary would not normally extrapolate membership data more than three years from the effective date of the membership data.

**Assumptions**

.03 The assumptions that the actuary uses would be best estimate assumptions, unless otherwise specified in the relevant financial reporting standards or as otherwise selected by the preparers of the financial statements.

.04 Repealed

**Benefit commitments**

.05 The actuary would include in the valuation of pension benefit obligations the effect of a commitment to provide benefits beyond the terms of the plan to the extent stipulated by the preparers of the financial statements.

**Expenses**

.05.1 The actuary's advice on a pension plan would take account of expenses, including whether or not they are expected to be paid from the pension plan's assets, if any.

**Extrapolations**

.05.2 The actuary may extrapolate results of an earlier valuation using appropriate extrapolation techniques. The actuary would not normally extrapolate valuation results more than four years from the effective date of the membership data.

## 3420 Reporting: External User Report

.01 An external user report should:

- Include the calculation date and the report date;
- Describe the sources of membership data, plan provisions, and the pension plan's assets, and the dates at which they were compiled;
- Describe the membership data and any limitations thereof, and any assumptions made about missing or incomplete membership data;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Describe the market value of assets and a summary of the assets by major category;
- Describe the pension plan's provisions;
- Describe any material accounting policies relevant to the work;
- Describe any commitment to provide benefits beyond the terms of the plan reflected in the valuation of pension obligations;
- Report the funded status at the calculation date and the applicable service cost;
- Disclose any pending but definitive or virtually definitive amendment of which the actuary is aware, and whether or not such amendment has been included in determining the funded status and the service cost;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, and, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- Describe any contingent benefits provided under the pension plan and the extent to which such contingent benefits are included or excluded in determining the funded status and the service cost;
- Describe any benefits that are not contingent benefits and that have been excluded in determining the funded status and the service cost;
- Describe the method and period selected in connection with any amortizations;

- If the valuation is an extrapolation of an earlier valuation, then describe the method and any assumptions for, and the period of, the extrapolation; and
- State whether or not the valuation and/or extrapolation conforms with the actuary's understanding of the financial reporting standards specified by the terms of an appropriate engagement. [Effective May 1, 2019]

.02 An external user report should provide the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding assumptions which should usually be, "In my opinion, the assumptions are appropriate for purposes of the valuation.";
- A statement regarding calculations, which should usually be, "In my opinion, the calculations have been made in accordance with my understanding of the requirements of [name financial reporting standard]"; and
- A statement regarding conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective March 31, 2015]

.03 An external user report should be sufficiently detailed to enable another actuary to assess the reasonableness of the valuation. [Effective December 30, 2012]

**Membership data**

.04 Any assumptions and methods used in respect of insufficient or unreliable membership data would be described.

.05 **Reference to report on funding**

The descriptions required in the external user report may be incorporated by reference to an external user report on funding.

# 3500 Pension Commuted Values

## 3510 Scope

.01 The standards in this section 3500 apply to advice on the computation of commuted values, including commuted values to be paid from a pension plan that is registered under an Act when the method of settlement is a lump sum payment in lieu of an immediate or deferred pension resulting from death or individual termination of plan membership, except for the specific circumstances that are described below in paragraph 3510.03. In particular, the standards in this section 3500 apply

- In a jurisdiction whether or not there is legislation in that jurisdiction that specifically provides for portability of pension benefit credits.
- Regardless of limits imposed by the Income Tax Act (Canada) on amounts that may be transferred to other tax-sheltered retirement plans.
- Subject to paragraph 3570.05, regardless of the specific adjustments to commuted values in order to determine the lump sums paid from a pension plan required by the terms of the plan in accordance with applicable legislation. An example of such an adjustment would be the requirement by pension legislation to reduce the lump sum payment to a former pension plan member if the plan is less than fully funded.
- As modified by subsection 3570, to the determination of commuted values of pensions and deferred pensions payable from target pension arrangements, such as certain target benefit plans and multi-employer pension plans. For purposes of this section 3500, a target pension arrangement is a pension plan for which applicable legislation contemplates the reduction to the accrued pensions of plan members and beneficiaries while the pension plan is ongoing as one of the available options for maintaining the funded status of the pension plan, and where the reduction in accrued pensions is not necessarily caused by the financial distress of the plan sponsor or sponsors.
- Under a reciprocal pension agreement between plan sponsors where the result of the reciprocal agreement is either to establish a pension amount determined on a defined contribution basis or to establish an account balance under a defined contribution provision of a plan, whether the account balance is to be converted immediately or subsequently into a pension.

.02 The standards in this section 3500 also apply to the determination of a lump sum payment from the pension plan in lieu of an immediate or deferred pension to which a plan member's former spouse is entitled after a division of the member's pension on marital breakdown.

.03 The standards in this section 3500 do not apply:

- Under a reciprocal pension agreement between plan sponsors where the result of the reciprocal agreement is to provide defined pension benefits or target pension benefits for the plan member;
- To the determination of commuted values of pensions and deferred pensions payable from pension arrangements that are not registered under an Act;
- To the conversion of defined pension benefits or target pension benefits to a defined contribution arrangement where there is no termination of active employment;
- To the determination of commuted values of pensions that have commenced payment and where commutation is at the discretion of the member, except as explicitly required under paragraphs 3510.02 or 3560.01;
- When calculating the capitalized value of pension benefits for actuarial evidence purposes, pursuant to part 4000, where such value does not relate to a commuted value payable from a registered pension plan; or
- To the determination of commuted values of pensions and deferred pensions under a target pension arrangement in the case of a full or partial wind-up.

**Act**

.04 For the purposes of this section 3500, "Act" means a pension benefits standards act of a province or the federal government of Canada or the Income Tax Act (Canada).

**Retirement compensation arrangements**

.05 Since retirement compensation arrangements (RCAs) are not required to be registered under the Income Tax Act (Canada), this section 3500 applies to commuted values payable from an RCA only if the RCA is registered under a pension benefits standards act of a province or the federal government of Canada.

## 3520 Method

.00 A commuted value calculated in accordance with the methods and assumptions of this section 3500 is intended to represent the economic value of the immediate or deferred pension that would have been paid from the pension plan. That is, it is intended to represent the value that the marketplace would attribute to that pension, while reflecting certain simplifications in the calculations and requiring in some cases that certain assumptions be common among different plans. It is not intended to include any value that marketplace participants such as insurance companies might attribute to potential costs different than expected due to the assumption of risks such as longevity and inflation.

.01 The commuted value should be independent of the funded status of the pension plan, except in the circumstances described in paragraph 3540.16.1 and paragraph 3570.05. [Effective December 1, 2020]

.02 The period for which the commuted value applies before recomputation is required may be established by the plan terms or applicable legislation, or by a plan administrator who is empowered to specify such period. Commuted values paid after the end of such period should be recomputed on the basis of a new valuation date. If the period for which the commuted value applies before recomputation is required is not established by the terms of the plan or applicable legislation, or by a plan administrator who is empowered to specify such period, the period should be established as nine months after the valuation date. [Effective December 1, 2020]

.03 The commuted value should be adjusted for interest, taking into account the requirements of applicable legislation, between the valuation date and the first day of the month in which the payment is made. Unless otherwise required by applicable legislation, the interest rates used to calculate the commuted value should be used for such adjustment. [Effective December 1, 2020]

.04 Subject to paragraph 3570.05, the commuted value should reflect the plan member's full benefit entitlement as a deferred or immediate pensioner, as may be applicable, determined under the terms of the pension plan. In the case of a deferred pensioner, the commuted value should include the value of the death benefit that would have applied before commencement of the deferred pension. [Effective December 1, 2020]

.05 A commuted value should not be calculated using methods or assumptions that produce a commuted value smaller than the value computed in accordance with this section. [Effective December 1, 2020]

**Valuation date**

.06 The valuation date means the date as of which a value is being computed. Generally, this would be the date upon which the plan member becomes entitled to an immediate or deferred pension resulting from death or individual termination of plan membership, or as of such other date as may be determined either by applicable legislation, by the terms of the plan, or by a plan administrator who is empowered to do so, on which the right to receive a commuted value becomes effective.

.07 In the event that recomputation is required in accordance with these standards, a new valuation date would be established. Calculations would be made at the new valuation date in accordance with the standards in effect on the new valuation date.

**Conditions attached to payment**

.08 Applicable legislation or the terms of the plan may attach conditions to the payment of the full commuted value when the plan is less than fully funded on a plan termination basis.

**Benefit entitlement**

.09 The following applies except for commuted values calculated in accordance with subsection 3570. Subject to paragraph 3530.06.3, where at the valuation date, a plan member has the right as a deferred or immediate pensioner, as may be applicable, to optional forms of pension, and where such right is contingent on an action that is within the member's control and where it is reasonable to assume that the member will act so as to maximize the value of the benefit, the option that has the greatest value would be used in determining the commuted value. For example, where a member has terminated employment and, upon application, is eligible for a particular benefit such as a subsidized joint and survivor form of pension that has a value, it is reasonable to assume that, upon acquiring expert advice, the member will apply for the benefit.

.10 Repealed

.11 The commuted value using these assumptions made in accordance with the preceding paragraph 3520.09 and subsequent paragraphs 3530.06 and 3530.06.3 may prove to have recognized certain potential entitlements that are never realized, or may prove to have disregarded certain entitlements that ultimately provide value.

**Alternative methods and assumptions**

.12 A commuted value may be calculated based on methods and assumptions that differ from those prescribed in these standards only if

- The resulting value is larger; and
- Such value is required by the terms of the plan or applicable legislation, or by a plan administrator who is empowered to specify the basis on which commuted values are to be determined.

## 3530 Demographic Assumptions

.01 Except for situations specifically noted below, the following should be assumed:

- Separate mortality rates for male and female members; and
- Except for commuted values calculated in accordance with subsection 3570, mortality rates in accordance with a mortality table promulgated from time to time by the Actuarial Standards Board for the purpose of these calculations. [Effective December 1, 2020]

.02 No adjustment should be made to reflect the health or smoker status of the member. [Effective February 1, 2014]

.03 The age of the plan member on the valuation date should be used when valuing a pension. [Effective December 1, 2020]

.04 If the plan provides a contingent benefit only to the person who is the plan member's spouse at the date of termination of membership, the actual age of the spouse, if any, should be used in the computation. If this information cannot be obtained, an appropriate proportion married and age difference between the plan member and spouse should be assumed. [Effective February 1, 2018]

.05 Where the plan provides a contingent benefit to a plan member's spouse and a change in the member's marital status after the valuation date is relevant to the determination of the commuted value, an appropriate assumption should be made concerning the likelihood of there being an eligible spouse, and the age of that spouse, at the time of death. [Effective December 1, 2020]

.06 The following applies, except for commuted values calculated in accordance with subsection 3570. When valuing deferred pensions, including deferred pensions for a plan member who may also be entitled to an immediate pension, the normal retirement age should be used, except in the situation where the terminated plan member has the right to elect an earlier commencement date and the consequent early retirement pension exceeds the amount that is of actuarial equivalent value to the pension payable at normal retirement age. In this case, subject to paragraph 3530.06.3, it should be assumed with a probability of 50% that retirement will occur at the age that would result in the highest commuted value and with a probability of 50% that retirement will occur at the earliest age at which the plan member will be entitled to an unreduced lifetime pension. In the situation where the terminated plan member's age on the valuation date is greater than or equal to the earliest age at which the plan member will be entitled to an unreduced lifetime pension, subject to paragraph 3530.06.3, the valuation date should be used as the assumed retirement date, with the commuted value incorporating any retroactive payments required by applicable legislation. [Effective December 1, 2020]

.06.1 For the purposes of paragraph 3530.06, where the early retirement reductions for a deferred pension are different for different periods of accrued service, the retirement age that would result in the highest commuted value would reflect the value of the pension earned for all periods of accrued service combined. However, the age at which the plan member will be entitled to an unreduced lifetime pension would be determined separately for each period of accrued service.

.06.2 For the purposes of paragraph 3530.06, where the amount of a member's deferred lifetime pension is projected to be affected at one or more retirement dates by limits imposed by the Income Tax Act (Canada) *("ITA limits")*, the earliest retirement age at which the plan member will be entitled to an unreduced lifetime pension would be the earliest retirement age at which the member's deferred lifetime pension either:

- is not affected by the ITA limits and the deferred lifetime pension is not reduced for early commencement; or
- is affected by the ITA limits and the ITA limits at that age do not include a reduction for early commencement.

.06.3 However, where a right described in paragraph 3520.09 or 3530.06 is contingent upon an action that is within the member's control and where it is not reasonable to assume the retirement assumption determined in accordance with paragraph 3530.06 or where it is not reasonable to assume that the member will always act to maximize the value of the benefit under paragraph 3520.09, an appropriate assumption would be made for the likelihood and timing of such action. For example, where a member is continuing in employment and is entitled to an unreduced pension that commences upon termination of employment, it may not be reasonable to assume that the member will immediately terminate employment in order to become eligible for an immediate benefit. In determining the likelihood and timing of such action, group data may be used.

.07 The demographic assumptions would be the same for all types of immediate and deferred pensions.

**Mortality**

.08 Commuted values would not vary according to the sex of the plan member when required by applicable legislation or by the terms of the plan or by the plan administrator if the administrator is so empowered by the terms of the plan. In this case, a blended mortality approach would be adopted by either developing a mortality table based on a combination of male and female mortality rates, or computing the commuted value as a weighted average of the commuted value based on male mortality rates and that based on female mortality rates. The relative proportions of males versus females would be appropriate for the particular plan.

.09 If the requirement that commuted values do not vary according to the sex of the plan member is legislated and applies only to benefits earned after a particular date or only to a subgroup of plan members, the use of a blended mortality approach may be extended to commuted values of benefits earned prior to such date or to commuted values of benefits of all members.

## 3540 Economic Assumptions

.01 Economic assumptions that vary depending on whether the pension is fully indexed, partially indexed, or non-indexed should be selected. For commuted values calculated in accordance with subsection 3570, the economic assumptions should be determined in accordance with subsection 3570. [Effective December 1, 2020]

.02 Economic assumptions should be selected based on the reported rates for the applicable CANSIM series for the calendar month immediately preceding the month in which the valuation date falls. [Effective December 1, 2020]

.03 Two interest rates and two rates of pension escalation, when applicable, should be calculated. The first rate is applicable to the first 10 years after the valuation date and the second is applicable to all years thereafter. [Effective December 1, 2020]

.04 The commuted value of a fully or partially indexed pension should be at least equal to the commuted value applicable to a non-indexed pension in the same amount and having similar characteristics. [Effective April 1, 2009]

.05 The following three factors should be determined from the CANSIM series:

| CANSIM Series | Description | Factor |
|---|---|---|
| V122542 | Seven-year Government of Canada benchmark bond yield, annualized (final Wednesday of month) | $i_7$ |
| V122544 | Long-term Government of Canada benchmark bond yield, annualized (final Wednesday of month) | $i_L$ |
| V122553 | Long-term real-return Government of Canada bond yield, annualized (final Wednesday of month) | $r_L$ |

Note that the factors determined above are not the reported CANSIM series, but the annualized value of the reported figure. [Effective December 1, 2020]

.06 A fourth factor should also be determined as follows:

$$r_7 = (1 + r_L) * (1 + i_7)/(1 + i_L) – 1$$

[Effective February 1, 2022]

.06.1 Four bond yield spreads should be determined, based on the index yields for the final Wednesday of the calendar month immediately preceding the month in which the valuation date falls, calculated as follows:

$PS_{1\text{-}10}$ = (Canada Mid-term provincial bond index yield, annualized) – (Canada Mid-term federal non-agency bond index yield, annualized)

$CS_{1\text{-}10}$ = (Canada Mid-term corporate bond index yield, annualized) – (Canada Mid-term federal non-agency bond index yield, annualized)

$PS_{10+}$ = (Canada Long-term provincial bond index yield, annualized) – (Canada Long-term federal non-agency bond index yield, annualized)

$CS_{10+}$ = (Canada Long-term corporate bond index yield, annualized) – (Canada Long-term federal non-agency bond index yield, annualized)

The bond index yields, before being annualized, referred to in this paragraph 3540.06.1 are the average semi-annual mid market yields to maturity for each index published by FTSE Canada Debt Capital Markets at the market close on the final Wednesday of the calendar month immediately preceding the month in which the valuation date falls, or such other bond index yields or calculation bases that may be promulgated from time to time by the Actuarial Standards Board for purposes of these calculations.

The bond index yields used to calculate $PS_{1\text{-}10}$, $CS_{1\text{-}10}$, $PS_{10+}$, or $CS_{10+}$ are not the yields published, but the annualized value of the published figures.

If $PS_{1\text{-}10}$, $CS_{1\text{-}10}$, $PS_{10+}$, or $CS_{10+}$ as calculated above is less than zero, the bond yield spread should be set equal to zero. [Effective December 1, 2020]

.06.2 Two spread adjustments should be determined as follows:

$$s_{1\text{-}10} = (0.667 * PS_{1\text{-}10}) + (0.333 * CS_{1\text{-}10})$$

$$s_{10+} = (0.667 * PS_{10+}) + (0.333 * CS_{10+})$$

If $s_{1\text{-}10}$ or $s_{10+}$ as calculated above is more than 1.5%, the spread adjustment should be set equal to 1.5%. [Effective December 1, 2020]

.07 The following interest rates should be used to calculate commuted values:

| | **Interest rates** |
|---|---|
| First 10 Years | $i_{1\text{-}10} = i_7 + s_{1\text{-}10}$ |
| After 10 Years | $i_{10+} = i_L + 0.5 * (i_L - i_7) + s_{10+}$ |

If $i_{1\text{-}10}$ or $i_{10+}$ as calculated above is less than zero, that interest rate should be set equal to zero. [Effective February 1, 2022]

.08 Repealed

.09 For pensions that are fully indexed to increases in the Consumer Price Index the rates of pension escalation should be determined based on the implied rates of increase in the Consumer Price Index for any escalation falling within the first 10 anniversaries of the valuation date inclusive, and thereafter determined as follows:

| | **Implied rates of increase in CPI** |
|---|---|
| First 10 Years | $c_{1\text{-}10} = (1+i_7) / (1+r_7) - 1$ |
| After 10 Years | $c_{10+} = (1+i_L + 0.5 * (i_L - i_7)) / (1+r_L + 0.5 * (r_L - r_7)) - 1$ |

[Effective December 1, 2020]

.10 For pensions that are partially indexed to increases in the Consumer Price Index, the rates of pension escalation should be determined by applying the partial indexing formula of the plan to those rates of increase in the Consumer Price Index, determined in accordance with paragraph 3540.09. [Effective December 1, 2020]

.11 Where rates in pension escalation are related to increases in the average wage index, it should be assumed that the average wage index will increase at rates that are one percentage point higher than the rates of increase in the Consumer Price Index. [Effective December 1, 2020]

.12 A pension that is indexed according to an excess interest approach involves increases that are linked to the excess of formula A over formula B, where A is some proportion of the rate of return on the pension fund or on a particular class of assets, and B is a base rate or some proportion of the rate of return on another asset class. In determining the interest rates under formula A and formula B, the interest rates determined in accordance with paragraph 3540.07 should be used as proxies for the rate of return on the pension fund or on any particular asset class for which the rate of return is expected to be equal to or greater than the non-indexed interest rates determined in accordance with paragraph 3540.07. [Effective December 1, 2020]

.13 Prior to calculating the commuted value, the rates of interest and/or rates of pension escalation determined in accordance with this subsection 3540 should be adjusted using either of the following approaches:

- Round each of the rates of interest and rates of pension escalation to the nearest multiple of 0.10%; or
- Round to the nearest multiple of 0.10%
  - The rates of interest, and
  - The compound difference between the rates of interest and the rates of pension escalation (the "rounded interest rates net of pension escalation").

  The final rates of pension escalation would then be determined based on the compound difference between the rounded rates of interest and the rounded interest rates net of pension escalation. This approach produces rounded interest rates, unrounded rates of pension escalation and rounded interest rates net of pension escalation.

Any rates of interest, increase, or escalation used in calculations prior to the final step of the determination should not be rounded. [Effective December 1, 2020]

**Pension index frequency**

.14 Reasonable approximations may be used to take into account the specific circumstances of the situation regarding payment frequency, indexing frequency, and time and amount of the first increase of pension escalations.

**Pension indexed on an excess interest formula**

.15 If the pension is indexed on an excess interest formula and the particular asset class is one for which the rate of return is expected to be less than the interest rates determined in accordance with paragraph 3540.07, in determining the expected rate of return on a particular asset class for this purpose, the current economic environment as well as future expectations would be considered.

**Other modifications**

.16 Where pension escalation rates are either modified by applying a maximum or minimum annual increase, with or without carry forward of excesses or deficiencies to later years, or modified by prohibiting a decrease in a year where the application of the formula would otherwise cause a decrease in pension, the pension escalation rates otherwise applicable would be adjusted, based on the likelihood of the modification causing a material change in the pension payable in any year. In determining such likelihood, the current economic environment as well as future expectations would be considered. Either a stochastic or deterministic analysis may be used to determine the pension escalation rates.

.16.1 Where pension escalation rates are based on the funded status of the pension plan, the pension escalation rates otherwise applicable would be adjusted, based on the likelihood of the plan's funded status causing a material change in the pension payable in any year. In determining such likelihood, the current funded status of the plan and the projected funded status in future years would be considered in determining the pension escalation rates. A stochastic or deterministic analysis may be used to determine the pension escalation rates.

.17 Where pension escalation rates are not determined by reference to increases in the Consumer Price Index, the commuted value would be consistent with the values of non-indexed pensions and fully indexed pensions.

**Alternative calculation method**

.18 Repealed

## 3550 Disclosure

.01 When communicating the amount of the commuted value of a member's pension, the following should be provided:

- A description of the benefit entitlements involved.
- A description of the actuarial assumptions used in determining the commuted value and the rate of interest to be credited between the valuation date and the first day of the month in which the payment is made. For indexed pensions, both the non-indexed nominal interest rates and the pension escalation assumptions should be disclosed separately.
- A statement of the period for which the commuted value applies before recomputation is required.
- When the payment of the full commuted value is subject to a condition based on the funded status of the plan, the additional contribution required for the payment of the full commuted value to be made or the recommended schedule for payment of the balance of the commuted value, if applicable.
- A statement that, because the commuted value is based on a number of assumptions, the retirement income provided by the commuted value may be either greater or less than the pension payments that the member would have received from the pension plan.
- A statement as to whether the commuted value has been computed in accordance with these standards. [Effective December 1, 2020]

.02 Where the commuted value has not been determined in accordance with these standards, it should be clearly stated that the calculation is not in compliance with these standards and, unless the areas of noncompliance are due to the requirements of applicable legislation, the areas of noncompliance and the reasons for the noncompliance should be disclosed. [Effective December 1, 2020]

.03 When communicating to the plan administrator an actuarial basis to be used in determining commuted values, it should be stated that the actuarial basis is in accordance with these standards. [Effective December 1, 2020]

.03.1 The disclosures in paragraphs 3550.01 to .03 above and paragraph 3570.12 would be made in both an external user report and a written internal user report.

**Disclosure of plan values which differ from these standards**

.04 In a situation where the use of commuted values (called plan values in this subsection 3550) that are different from those computed in accordance with this section 3500 is required by the terms of the plan or applicable legislation, or by a plan administrator who is empowered to specify the basis on which commuted values are to be determined, the following disclosure requirements are applicable:

- If the plan values are lower, it should be disclosed that the commuted values so calculated are in accordance with the terms of the plan or the applicable legislation but not in accordance with the standards; or
- If the plan values are higher, it should be disclosed that the commuted values so calculated are in accordance with the terms of the plan or the applicable legislation and the standards. [Effective December 1, 2020]

.05 Where commuted values that do not vary according to the sex of the plan member are required to be calculated, and where that requirement applies only to benefits earned after a particular date or only to a subgroup of plan members, the extent to which the blended mortality approach has been extended to benefits earned before the particular date or to benefits of all members should be described. [Effective December 1, 2020]

.06 Where assumptions or methods described in these standards are used to calculate a commuted value in a situation where these standards do not apply, it should not be stated or implied that the commuted value has been computed in accordance with these standards. [Effective December 1, 2020]

## 3560 Reduced Life Expectancy

.01 The standards in this subsection 3560 apply to advice on the computation of commuted values, from a registered pension plan, where the right to receive the lump sum is based on subsection 51.1 of the regulations to the Ontario Pension Benefits Act. These standards may also be applicable in other directly comparable situations.

.02 These standards do not apply where the right to receive a lump sum is not conditional upon medical certification, under legislation, or the terms of the plan, even if the former member is known to be terminally ill.

.03 All standards set out in section 3500 apply, except as superseded by the following recommendations.

.04 The commuted value should be calculated as of the date of the medical certificate specifying that the former member has life expectancy less than two years, even if other conditions for payment of the benefit (such as spousal consent) are not met until a later date. [Effective April 1, 2009]

.05 The commuted value should be adjusted for interest and benefits paid to the date of payment. [Effective April 1, 2009]

.06 The computation should not be adjusted to reflect the actual death or change in health of the former member after the valuation date. However, if a former pension plan member becomes eligible for immediate commencement of a pension after the date of the medical certificate and prior to payment of the benefit, this eligibility should be reflected in the calculation. [Effective April 1, 2009]

.07 If the former member is entitled to a commuted value transfer based on the terms of the plan or legislation that is not conditional on reduced life expectancy, the amount payable should be the greater of the amount calculated in accordance with this subsection 3560 and the amount computed in accordance with subsections 3520 through 3540 and subsection 3570, if applicable, without regard to shortened life expectancy. [Effective December 1, 2020]

**Benefit Entitlement**

.08 The commuted value would reflect the plan member's full benefit entitlement as a deferred or immediate pensioner, as may be applicable, determined under the terms of the pension plan.

There are three possible cases:

(a) A former member with deferred pension entitlement, not eligible for immediate commencement of pension.

In this case, the commuted value would reflect the present value of the death benefits that would be payable in respect of the former member. For this purpose, the value of the death benefit would be calculated as of the valuation date, assuming the former member died as of the valuation date.

(b) A former member with deferred pension entitlement, eligible for immediate commencement of pension.

In this case, the lump sum value would be the greater of the amount determined as in (a) above and a value determined as if the member had retired at the date of valuation and elected the most favourable combination of the highest surviving spouse pension permitted by the plan (if there is an eligible spouse) and the longest guaranteed period available under the plan. This value would be determined as for pensioners in (c) below.

(c) A former member in receipt of pension.

In this case, the commuted value would reflect the present value of pension payments for a period certain of four months from the valuation date, any additional guaranteed payments and any survivor benefits potentially payable.

**Disclosure**

.09 When communicating the amount of the commuted value of a member's pension, a description of the survival period assumption would be provided.

## 3570 Target Pension Arrangements

.01 The standards in this subsection 3570 apply to the determination of commuted values of pensions and deferred pensions payable from target pension arrangements, such as certain target benefit plans and multi-employer pension plans. A target pension arrangement is a pension plan for which applicable legislation contemplates the reduction to the accrued pensions of plan members and beneficiaries while the pension plan is ongoing as one of the available options for maintaining the funded status of the pension plan, and where the reduction in accrued pensions is not necessarily caused by the financial distress of the plan sponsor or sponsors.

.02 All standards set out in preceding subsections of section 3500 apply, unless indicated otherwise or as superseded by the following recommendations.

.03 A commuted value calculated in accordance with the going concern assumptions and methods of this subsection 3570 is intended to represent the economic value of the immediate or deferred pension that would have been paid from the target pension arrangement in accordance with the terms of the pension plan and applicable legislation.

.04 The commuted value should be calculated as the actuarial present value on the valuation date of the member's benefit entitlement as a deferred or immediate pensioner and, subject to the paragraphs that follow in this subsection 3570, determined using the same going concern assumptions as used in the most recent funding actuarial valuation report or cost certificate filed with the applicable pension regulator. [Effective December 1, 2020]

.05 The actuarial present value of the member's benefit entitlement may be adjusted to reflect the funded status of the pension plan or to reflect the member's share of the plan assets, only as required by applicable legislation or by the terms of the plan, as described in official plan documents such as a plan text, benefits policy, and/or collective agreement. The funded ratio of the plan used to determine the adjustment should be calculated in accordance with accepted actuarial practice and should be based on a valuation date no earlier than the valuation date of the most recent funding actuarial valuation report or cost certificate filed with the applicable pension regulator. Subject to the exceptions in paragraphs 3570.09 and 3570.10, the assumptions used to calculate the funded ratio of the plan should be consistent with the assumptions used to calculate the actuarial present value of the member's benefit entitlement and there should be consistency with respect to the inclusion or exclusion of provisions for adverse deviations in the calculations, unless the actuary determines that consistency is not appropriate due to an unusual situation, in which case the actuary would describe and justify the rationale for such lack of consistency. [Effective December 1, 2020]

**Assumptions**

.06 The assumptions used to calculate the commuted value would be the assumptions used for the pension plan's going concern valuation from the most recent funding actuarial valuation report or cost certificate filed with the applicable pension regulator.

.07 Notwithstanding paragraph 3570.06, the commuted value would not include any margins for adverse deviations in the assumptions or provisions for adverse deviations that are reflected in the going concern valuation, unless their inclusion in the commuted value is required by applicable legislation or by the terms of the plan, as described in official plan documents such as a plan text, benefits policy, and/or collective agreement.

.08 Notwithstanding paragraph 3570.06, the interest rate used to calculate the commuted value would be net of any adjustment for investment expenses and, if required by applicable legislation or by the terms of the plan as described in official plan documents such as a plan text, benefits policy, and/or collective agreement, would be adjusted for any non-investment expenses that are expected to be paid from the pension plan's assets.

.09 Notwithstanding paragraph 3570.06 and subject to paragraph 3570.10, when calculating the commuted value of a deferred pension, the assumptions used to determine the actuarial present value of the member's benefit entitlement would be assumptions that are appropriate for purposes of performing an actuarial valuation of a pension plan consisting of only the group of deferred pensioner members of the plan. The actuary would use judgment in such circumstances. For example, in the case of the going concern valuation from the most recent funding actuarial valuation report of a plan filed with the applicable pension regulator, the age that deferred pensioner members are assumed to commence their pension may not be a material assumption and therefore the normal retirement age was used. However, if deferred pensioner members have the right to elect an earlier commencement date and the consequent early retirement pension exceeds the amount that is of actuarial equivalent value to the pension payable at normal retirement age, it may be appropriate to assume pension commencement at an earlier age for purposes of calculating the commuted value.

.10 Notwithstanding paragraph 3570.06, with the exception of variations based on age and sex, the mortality assumption used to calculate the commuted value would be an assumption that is appropriate for the overall plan membership and would not vary for different subsets of the plan population.

**Combination plans**

.11 Some plans provide certain benefits that fall within the definition of the benefits provided by target pension arrangements, while other benefits provided by the plan fall within the scope of this section 3500, but do not fall within the definition of the benefits provided by target pension arrangements. For these plans, the commuted value of the benefits that fall within the definition of the benefits provided by target pension arrangements would be calculated in accordance with this section 3500, including subsection 3570. The commuted value of the benefits that do not fall within the definition of the benefits provided by target pension arrangements would be calculated in accordance with this section 3500, but would not reflect the requirements of subsection 3570.

**Disclosure**

.12 In addition to the disclosures specified in preceding subsections of section 3500, any adjustments determined in accordance with paragraph 3570.05 should be disclosed. Adjustments determined in accordance with paragraph 3570.05 are considered to be a component of the calculation of a commuted value that is in accordance with the standards. [Effective December 1, 2020]

# 4000—Actuarial Evidence

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# 4100 Scope

.00 Part 1000 applies to work within the scope of this part 4000.

.01 The standards in part 4000 apply to actuarial evidence work.

.02 With respect to actuarial evidence work:

- An expert is an actuary who is qualified by knowledge, skill, experience, training, or education to render an opinion or otherwise testify concerning the matter at hand; and
- An expert opinion is a conclusion drawn from actuarial knowledge and experience or from the application of one or more actuarial methods to a body of data.

.03 An expert opinion may be provided in a written report, oral or written testimony, or both.

.04 The provision of an expert opinion which is actuarial evidence work and which involves a practice area such as insurance or pensions is work in both that practice area and the actuarial evidence practice area. The actuary would refer to the standards applicable to that practice area, in addition to the standards in part 4000.

**Examples**

.05 Examples of actuarial evidence work are:

- Determination of the capitalized value of pecuniary losses arising as a result of an event such as personal injury, death, or wrongful dismissal from employment;
- Determination of capitalized values of pensions in marriage breakdown proceedings;
- Expert opinions given in litigation arising from work completed in respect of a pension plan or an insurance business;
- Work as an expert advisor to a mediating official, such as a judge;
- Determination of effective rates of interest in cases of alleged charging of criminal interest rates; and
- Provision of an expert opinion with respect to another actuary's work that is being challenged or in cases of alleged professional negligence.

.06 Work in a practice area, such as insurance or pensions, may be performed in an adversarial environment but not involve an anticipated expert opinion for a dispute resolution proceeding. Such work would not normally be considered to be actuarial evidence work. Examples of such work, where the standards in part 4000 are not applicable, are:

- Pension plan valuations or costings related to union negotiations, or actuarial assistance with the merger of pension plans or the valuation of a pension plan in connection with the sale of a business; and
- Actuarial assistance with the valuation of an insurer, the merger of insurers, or the acquisition of an insurer.

**Fact evidence**

.07 The standards in part 4000 do not apply to the work of an actuary who is providing only fact evidence, and not an expert opinion. For example, an actuary testifying in his or her own defense in a proceeding related to professional negligence would normally be providing fact evidence, and not an expert opinion. As another example, an actuary may be providing evidence in a dispute resolution proceeding regarding his or her involvement in work performed in a practice area such as insurance or pensions. If the circumstances were not adversarial and there was no anticipation of a dispute resolution proceeding at the time the work was performed, the actuary's evidence in the dispute resolution proceeding would normally be fact evidence and not an expert opinion. The standards in part 4000 would apply, however, if the actuary's role includes providing an expert opinion in a dispute resolution proceeding, where such opinion is expected or required to be independent.

**Litigation advice**

.08 The terms of an appropriate engagement may require that the actuary provide only litigation advice, other than an expert opinion that is expected or required to be independent, such as assisting counsel or a client in identifying and analyzing legal or actuarial issues, advising in connection with relevant case law, and preparing for cross-examination of opposing witnesses. In such cases, provided that the actuary makes it clear that the work product does not represent an expert opinion that is actuarial evidence work, the standards in part 4000 would not apply.

.09 The terms of an appropriate engagement may require that the actuary provide both litigation advice that is not actuarial evidence work and also an expert opinion. If work related to the expert opinion meets the definition of actuarial evidence work, then the standards in part 4000 would apply to that aspect of the engagement.

**Additional guidance**

.10 Repealed

# 4200 General

## 4210 Circumstances affecting the work

.01 When performing actuarial evidence work, the actuary should take into account the circumstances affecting the work. [Effective February 1, 2018]

.02 The circumstances affecting the work would include:

- Relevant legislative or regulatory provisions;
- Rules of civil procedure and rules of court in the relevant jurisdictions;
- Other rules that may be applicable to the dispute resolution proceeding;
- Established legal principles relevant to the work; and
- Terms of an appropriate engagement under which the work is being performed.

.03 Relevant legislative or regulatory provisions may include:

- Provisions relating to allowable pecuniary damages under automobile insurance legislation or regulations;
- Provisions related to division of assets under a marital property act or regulations; and
- Provisions relating to pensions, benefits, insurance, or workers' compensation.

.04 Rules of civil procedure and rules of court, as well as other rules that may be applicable to the dispute resolution proceeding, may include:

- Mandated assumptions;
- Required content and format of reports;
- Role of experts; and
- Duties and obligations of experts.

.05 Established legal principles relevant to the work may address:

- Issues relevant to the actuary's engagement; and
- Role and obligations of experts.

.06 The terms of an appropriate engagement would define the role of the actuary and the purpose, context, and scope of the work. An engagement for actuarial evidence work would not be appropriate if it would impair the ability of the actuary to perform independent and objective work.

.07 Significant terms of an appropriate engagement may stipulate one or more of:

- Assumptions to be used in the actuary's work;
- Methods to be used in the actuary's work; and
- Various scenarios to be considered by the actuary.

.08 An engagement may be appropriate if its terms require that the actuary assist his or her client or counsel with challenging the application or a particular interpretation of existing law, regulation, court practice, or established legal principles relevant to the work. Nothing in part 4000 is intended to prevent the actuary from assisting with a challenge of the application or a particular interpretation of existing law, regulation, court practice, or established legal principles relevant to the work, even if the result of such challenge of the application or a particular interpretation would otherwise, in the opinion of the actuary, be inconsistent with accepted actuarial practice.

## 4220 Financial interest of the actuary

.01 The amount of the actuary's compensation should not be related to the outcome of the matter (e.g., dispute resolution proceeding) in connection with which the work is done. [Effective December 31, 2013]

.02 For example, contingency fees that depend on the outcome of the dispute resolution proceeding would not be appropriate.

## 4230 Role as expert

.01 The actuary's actuarial evidence work should be independent and objective. [Effective December 31, 2013]

.02 The actuary's role as an expert should be to assist the court or other entity in the dispute resolution proceeding in its search for truth and justice, and the actuary should not be an advocate for one side of the matter in dispute. [Effective December 31, 2013]

.03 Where the terms of the engagement require that the actuary provide both litigation advice that is not actuarial evidence work and also an expert opinion that is actuarial evidence work, the litigation advice role should not influence the independence and objectivity of such expert opinion. [Effective December 31, 2013]

.04 Where the actuary is providing both litigation advice that is not actuarial evidence work and an expert opinion that is actuarial evidence work, the actuary would have a clear understanding of the differences between the two roles included in the engagement. The actuary would clearly identify in any work product which component of the engagement is involved, and would ensure that the litigation advice role does not impair his or her ability to perform the actuarial evidence work.

## 4240 Testimony

.01 The actuary's testimony should be independent, objective, and responsive. [Effective December 31, 2013]

.02 Where the terms of the engagement require that the actuary provide both litigation advice that is not actuarial evidence work and also an expert opinion that is actuarial evidence work, the actuary should be aware that full disclosure of all work and work products with respect to both roles within the engagement may be required in any testimony. [Effective December 31, 2013]

.03 In the course of providing testimony in the dispute resolution proceeding, the actuary should:

- Present a balanced view of the factors surrounding the actuarial aspects of the questions put to him or her;
- Answer all the questions that are asked on the basis of his or her own best assessment of all the relevant factors;
- Apply best efforts to ensure that the evidence is clear and complete, that the information the actuary is providing will not be misunderstood or misinterpreted, and that the audience will be able to utilize it correctly; and
- Indicate when a particular issue or question falls outside his or her expertise. [Effective December 31, 2013]

.04 The actuary should respond truthfully and fully to questions posed in the course of providing testimony, but the actuary need not volunteer information which is beyond the scope of the question posed. [Effective December 31, 2013]

.05 Testimony is the actuary's communication presented in the capacity of an expert witness in any dispute resolution proceeding where the actuary is examined or cross-examined. Such testimony may be oral or written, direct or responsive, formal or informal.

.06 When responding to a direct question relating to any error or shortcoming the actuary perceives in the report of another actuary or expert witness, the actuary would respond truthfully and fully, notwithstanding paragraph 4710.08.

## 4250 Capitalized Values

.01 The actuary should calculate the capitalized value of future amounts payable in respect of an individual utilizing the actuarial present value method. [Effective December 31, 2013]

.02 Actuarial evidence work frequently deals with the determination of the capitalized value of amounts for purposes of a dispute resolution proceeding. These amounts are often payable in respect of an individual and sometimes in respect of a group of individuals. Such calculations must often be performed within a framework established by law, regulation, and/or legal precedent.

.03 Payment of the capitalized value is an alternative to payment of defined amounts to which an individual is entitled. Often the courts and others have recourse to require payment of a capitalized value when payment of the defined amounts comprising that value is not practical or not desired.

.04 Calculation of the capitalized value is within the domain of actuarial practice.

.05 The actuary would not calculate the capitalized value of future amounts that are subject to any contingent event as the present value of an annuity certain. For example, when utilizing the actuarial present value method in respect of a life annuity, the capitalized value of each life annuity payment is weighted by the probability of survival to the date of that payment. Under this method, the present value of possible overcompensation in an individual circumstance is balanced by the present value of possible undercompensation.

# 4300 Actuarial Evidence Calculations, Other than Capitalized Value of Pension Plan Benefits for a Marriage Breakdown and Criminal Rate of Interest

## 4310 Scope

.01 The standards in section 4300 apply to an actuary's advice when performing actuarial evidence calculations, other than for the capitalized value of pension plan benefits for a marriage breakdown and for a criminal rate of interest.

## 4320 Assumptions and methods

.01 The assumptions and methods selected by the actuary should be appropriate in the aggregate, taking into account the purpose of the work and the parts of the standards that are applicable to the actuary's work. [Effective December 31, 2013]

.02 The assumptions selected by the actuary should be best estimate assumptions, unless it is appropriate to incorporate margins for adverse deviations in accordance with the circumstances affecting the work. [Effective February 1, 2018]

.03 The actuary should ensure that any assumptions stipulated by the terms of the engagement are plausible. [Effective December 31, 2013]

.04 The assumptions and methods used by the actuary should take account of the circumstances affecting the work, including applicable law, regulation, court practice, and established legal principles relevant to the work. [Effective February 1, 2018]

.05 The assumptions and methods selected by the actuary should not be influenced by the party to the dispute resolution proceeding that has retained the actuary. [Effective December 31, 2013]

.06 Examples of the circumstances affecting the work where it would be appropriate to incorporate a margin for adverse deviations in an assumption include, but are not limited to:

- The assumption or the requirement for a margin for adverse deviations is mandated by law, regulation, court practice, or established legal principles relevant to the work; and
- The actuary's work relates to a practice area such as insurance or pensions, and the standards for that practice area require or permit the inclusion of a margin for adverse deviations for such work.

.07 Notwithstanding paragraph 4320.03, the terms of an appropriate engagement may stipulate assumptions that are not considered plausible by the actuary or methods that are not considered appropriate by the actuary. In such case, if the actuary performs the work in accordance with the terms of the engagement, the actuary would report the deviation from accepted actuarial practice in Canada.

.08 The terms of the engagement may require that the actuary complete calculations for related items, such as one calculation for the capitalized value of a pecuniary loss and another calculation for the income tax gross-up. The underlying assumptions would be consistent for the calculation of these related items. In this example, the actuary would utilize the same underlying assumptions, such as the same real rate of interest, the same rate of price inflation, and the same mortality assumption, for both the calculation of the capitalized value of the loss and the calculation of the income tax gross-up.

.09 Where there are insufficient data to support a particular assumption regarding a contingency incorporated in the actuary's work, the actuary may present a range of results.

## 4330 Contingencies

.01 The actuary should consider incorporating any contingency where, in the actuary's opinion, there are adequate legal, theoretical, or empirical grounds to justify this. The actuary should disclose the omission from the work of any contingencies he or she considers material. [Effective December 31, 2013]

.02 If the actuary gives advice on the effect of a specific contingency, that advice should be based on an assessment of that contingency, both alone and in combination with other factors, using appropriate actuarial methods. [Effective December 31, 2013]

.03 Where the actuary has prepared results under more than one scenario, the actuary's report would show the results of the actuarial calculations separately for each scenario and identify which contingencies have been incorporated in each scenario. For example, the results of the actuarial calculations under one scenario may include precise recognition of only net investment return and mortality. The results taking into account any other provision for contingencies would be prepared under another scenario and would be reported separately.

.04 Recognition of a contingency may create a positive or negative effect on a calculation.

## 4340 Application of law

.01 In a situation where law, regulation, court practice, or established legal principles relevant to the work mandates that a method or assumption be adopted in an actuarial evidence calculation, a broad interpretation of accepted actuarial practice in Canada is appropriate, so that in most such situations the law, regulation, court practice, or established legal principles relevant to the work would be considered to be within the range of accepted actuarial practice in Canada.

.02 Repealed

.03 Where an assumption is mandated by law, regulation, court practice, or established legal principles relevant to the work, such assumption may be outside of the range of assumptions that the actuary considers to be reasonable.

# 4400 Capitalized Value of Amounts Other than Pension Plan Benefits for a Marriage Breakdown

## 4410 Scope

.01 The standards in section 4400 apply to an actuary's advice when calculating the capitalized value of amounts other than pension plan benefits for a marriage breakdown. A capitalized value relates to amounts payable at various times, each amount subject to various contingencies related to the individual or to the individual's dependants. Examples of situations where capitalized values may be calculated are:

| Event | Capitalized Value of: |
|---|---|
| Disability | individual's loss of earnings, loss of household services, and/or cost of extraordinary expenses attributable to the disability. |
| Death | dependant's loss of financial support and/or loss of household services. |
| Wrongful dismissal | individual's loss of earnings, pension benefits, and/or employer-sponsored benefits other than pensions. |
| Marriage breakdown | individual's support obligations. |

## 4420 Assumptions and methods

**Past loss**

.01 In some cases, the capitalized value is the present value of amounts payable both before and after the date at which the capitalized value is established. For example, in an accident caused by negligence, litigation of the damages may result in the capitalized value becoming payable several years after the accident. Then the damages consist of those in respect of both the period before and the period after the date at which the capitalized value is established, called "past losses" and "future losses", respectively.

**Income tax**

.02 Subject to the terms of the engagement, the actuary may include an appropriate allowance in the capitalized value calculation for the expected effect of income tax, taking account of applicable law, regulation, court practice, and established legal principles relevant to the work. The actuary's report would deal with income tax in an internally consistent way, and the report would fully disclose the assumptions and methods utilized.

**Investment expenses**

.03 Subject to the terms of the engagement, the actuary may include an appropriate allowance in the capitalized value calculation for any expenses expected with respect to the future investment, management, or administration of any settlement amount, taking account of applicable law, regulation, court practice, and established legal principles relevant to the work. The actuary's report would deal with such investment expenses in an internally consistent way, and the report would fully disclose the assumptions and methods utilized.

# 4500 Capitalized Value of Pension Plan Benefits for a Marriage Breakdown

## 4510 Scope

.01 The standards in this section 4500 apply to an actuary's advice when the capitalized value of a pension plan's benefits is needed for calculating the value of family property at the breakdown of the marriage of a plan member.

.02 For the purposes of this section 4500, "plan" means "pension plan" and is broadly defined, including not only a plan that is registered under the federal Income Tax Act but also an unregistered plan, such as a retirement compensation arrangement and an unfunded pension plan.

.03 The standards in this section 4500 do not apply when the purpose of the calculation is to calculate an amount, in respect of a pension benefit, to be paid:

- By the plan to the plan member or beneficiary as a result of the plan member's death or termination of membership; or
- By a party other than the plan in connection with litigation other than in respect of a marriage breakdown.

.04 The standards in this section 4500 may provide useful guidance for similar calculations for other deferred compensation arrangements, such as a partnership retirement buy-out agreement, a sick leave buy-out plan, and a retirement lump sum allowance, but they do not provide useful guidance for current compensation arrangements such as group life and disability insurance.

.05 The standards in this section 4500 do not apply when applicable legislation mandates a different basis for the calculation of the value of a pension for family property purposes at the breakdown of the marriage of a plan member.

## 4520 Method

.01 The benefits to be valued are the plan's benefits in respect of the member (including survivor benefits vested in the member's spouse) at the calculation date or calculation dates. [Effective January 1, 2004]

.02 The value of the member's benefits is the capitalized value of the benefits to be valued, but assuming that the member has no spouse. The value of the survivor benefits vested in the member's spouse is the excess, if any, of the capitalized value of the benefits to be valued over the value of the member's benefits. [Effective January 1, 2004]

**Principle**

.03 The capitalized value would conform to the intent of applicable family law. The capitalized value may, thus, differ from the corresponding transfer value from a registered pension plan. Transfer values typically include only unconditional rights, whereas property under family law typically includes both vested and contingent rights. Thus, such contingent rights as early retirement rights, bridging benefits, and ad hoc inflation adjustments are property to be considered in a calculation for marriage breakdown purposes.

.04 The standards in this section will often produce more than one result, by taking account of alternative possibilities for:

- Pension commencement age;
- Future increases in accrued benefits before and after retirement;
- Allocation of value earned before marriage;
- Inclusion or exclusion of non-vested benefits; or
- Special circumstances, such as buy-back or transfer of benefits.

.05 If the actuary has reason to believe that the plan's financial position is so weak that payment of the capitalized benefits is doubtful, then the actuary would so report, making clear that allowance for this factor could significantly reduce the present values calculated, given that such present values have been calculated assuming that the plan would meet its obligations. In making that assessment, the actuary would take into account any benefits payable under provincial pension guarantee legislation. The actuary would take into account further the extent to which plan benefits are provided through a retirement compensation arrangement and/or an unfunded pension plan.

.06 The terms of the actuary's engagement may determine some or all of:

- The relevant law or jurisdiction;
- The calculation date or calculation dates;
- Retirement age, but only if established as a matter of fact pursuant to an agreement of the parties or a determination by the court; and
- Inclusion or exclusion of the effect of income taxes.

**Benefits to be valued**

.07 The benefits to be valued would include all of the plan's contractual benefits, including pre- and post-retirement death benefits, and any contractual inflation protection and non-contractual inflation protection.

.08 The benefits to be valued would exclude spousal survivorship benefits, except to the extent that these may have vested upon retirement prior to the calculation date.

.09 The form of plan benefits that would be valued would be the most favourable of any optional form available to the member with no spouse. For example, a 15-year guaranteed pension option would have a greater value than a five-year guaranteed pension option for a member with impaired mortality. However, if the applicable law disregards a particular optional form of plan benefit, then the actuary may omit that option in calculating the capitalized value.

.10 The benefits may include or exclude any non-vested benefits. Non-vested benefits may be included in the values, or may be illustrated separately, and would be valued without discount for the possibility of future forfeiture. Separately from the illustrated values, the report may contain comments including suggestions for recognizing the contingent nature of non-vested benefits. The references in this paragraph to inclusion of values of non-vested benefits apply in jurisdictions where the inclusion of such values depends on the plan provisions applicable to a deferred vested member. In other jurisdictions, the inclusion of such values depends on the extent to which continued employment is assumed.

.11 The capitalized values would include ancillary benefits that are provided by the plan as of the calculation date and are expected to become available to the member after the calculation date if the plan member continues as an active member of the plan, but are not available to the member as of the calculation date, such as unreduced early retirement benefits.

.12 The actuary would disclose whether or not the benefits valued include benefits that will be provided by the plan after the calculation date and that are expected to become available to the member after the calculation date if the plan member continues as an active member of the plan, but are not available to the member as of the calculation date, for example:

- A future increase in benefits as a result of a collective bargaining agreement; or
- A future increase in benefits as a result of an adopted plan amendment.

.13 The benefits referred to in paragraph 4520.11 are those payable by the plan as a going concern, and not those payable on plan wind-up, if different, unless the plan has been fully wound up or partially wound up with respect to the plan member.

.14 Where various legal interpretations for a specific question appear possible, the actuary would obtain clarification of such unclear matters from the instructing lawyer or from another authoritative source. If that is not possible, the actuary would advise that various interpretations exist, and would report the effects of these interpretations or report values that, in the actuary's opinion, are most consistent with accepted actuarial practice.

**Calculation date**

.15 The calculation date may be single or multiple, depending on the circumstances and applicable law. The possibilities include:

- The date of separation;
- The date of marriage or commencement of cohabitation;
- The date of trial; and
- The report date.

.16 If the use of an alternative calculation date, close to the calculation date, would significantly affect the capitalized value, then the actuary would so report. Examples are:

- The date at which the member becomes eligible for early retirement with unreduced benefits; and
- The date at which the plan is amended to enhance its benefits.

**Applicable standards**

.17 The applicable standards are those in effect at the calculation date. If there are two or more calculation dates, however, and if the standards applicable to one differ from the standards applicable to another, then the actuary would use the same standards for all calculation dates. The choice of standards would be governed by the latest of the calculation dates, except that the choice would be governed by the base calculation when the actuary selects an alternative calculation date, close to the calculation date, in accordance with the previous paragraph.

**Future service**

.18 If the member's employment terminated before the calculation date and was not reinstated at the report date, then the actuary would include nothing in the capitalized value on account of assumed service after the calculation date, even if reinstatement is possible after the report date. The actuary may, however, report a useful alternative calculation that assumes reinstatement.

.19 If the member's employment terminated between the calculation date and the report date and was not reinstated at the report date, then the actuary may, with disclosure, exclude from the capitalized value any non-vested benefits forfeited by the termination of employment.

**Effect on capitalized value of minimum benefits**

.20 In calculating the capitalized value, the actuary would take account of any minimum benefit related to member contributions, for example:

- The so-called "50% minimum employer contribution rule"; and
- A minimum benefit equal to the member's contributions accumulated with interest.

.21 The minimum benefit would not necessarily be limited only to the value determined on a termination of employment assumption. The capitalized value would incorporate the relevant minimum benefit rule according to the event.

**Effect on capitalized value of salary increases after the calculation date**

.22 If the pension is an earnings-related benefit, then the possibilities are:

- The capitalized value takes account of all the member's salary increases—general increases, promotional increases, and seniority increases—after the calculation date;
- The capitalized value takes account of the member's salary increases that result from general (as opposed to promotional and seniority) salary increases after the calculation date. A rationale for this possibility is that the member's spouse has no entitlement to the effect of promotions or seniority increases that the member earns after the calculation date;
- The capitalized value does not take account of the member's salary increases after the calculation date. A rationale for this possibility is that the member's spouse has no entitlement to the effect of salary increases, which depend on the member's continued employment after the calculation date.

.23 The assumed salary increases after the calculation date would be consistent with the prescribed economic assumptions, except that salary increases revealed by subsequent events would be substituted for the corresponding assumed increases.

**Effect on capitalized value of non-contractual indexing of pensions and other benefit adjustments**

.24 In calculating the capitalized value, the actuary would assume continuance of the plan's established practice or current policy, if any, for non-contractual indexing for inflation of pensions after pension commencement age and of vested deferred pensions before pension commencement age, unless there is explicit reason not so to assume. The actuary would report:

- The established practice or current policy; and
- The indexation assumption.

.25 If that assumption is doubtful, then the actuary would also report the numerical effect on the capitalized value of helpful alternative assumptions.

.26 In the case of a final or best average earnings plan, there would be no allowance made for indexing of vested deferred pensions before pension commencement age in the period for which salary increases are projected after the calculation date.

**Effect on capitalized value of income tax**

.27 Income tax may be taken into account in the calculation. If it is to be taken into account, then the actuary would do so by calculating the average income tax rate based upon the member's anticipated retirement income computed in "current" dollars, including accrued and projected future pension income, Canada Pension Plan, Old Age Security, and other anticipated income, and continuance of the tax environment at the report date or the calculation date; i.e., assuming continuation of the existing tax rates, brackets, surtaxes, and clawbacks, applied to the projected income on retirement expressed in "current" dollars. The actuary would disclose which date was used and if the tax environment is as at the report date, would disclose the use of any tax provisions that have not yet been enacted.

.28 The actuary may report useful alternative calculations that take income tax into account.

## 4530 Assumptions

.01 The actuary should select all assumptions, except those depending upon interpretation of applicable law. [Effective January 1, 2004]

**Mortality rates**

.02 The actuary should assume mortality rates in accordance with a mortality table promulgated from time to time by the Actuarial Standards Board for the purpose of these calculations, modified, if appropriate, to reflect the member's or the member's spouse's impaired health, if medically determinable. [Effective January 1, 2012]

.03 Tobacco use (or lack of tobacco use) would not, in itself, be sufficient reason to modify the mortality rates identified above.

.04 Use of unisex mortality rates would not be appropriate except that it may be appropriate in situations where the plan member has terminated employment and has elected, or has the option to elect, a transfer value that was or would be calculated under a unisex basis.

**Retirement age**

.05 If the retirement age is a matter of fact (i.e., one agreed by the parties or determined by the court), then the actuary would report the selection of the assumed retirement age as such.

.06 The retirement of the member before the report date does not necessarily preclude assumption of a different retirement age.

.07 Unless paragraph 4530.05 applies, the actuary would usually assume and report the results for a range of useful retirement ages, based on data at the calculation date, which would include:

- The earliest age at which the member is entitled to a pension whose amount is not reduced on account of early retirement, assuming that the member's service ceases at the calculation date;
- The earliest age at which the member is entitled to a pension whose amount is not reduced on account of early retirement, assuming that the member continues in service either to that age or to an earlier age after the calculation date;
- If there is an upper limit to the number of years of credited service, the earliest age at which the member has attained, or will attain, that upper limit and becomes entitled to a pension whose amount is not reduced on account of early retirement; and
- The normal retirement age.

**Economic assumptions**

.08 The actuary should select economic assumptions that depend on the reported rates for the applicable CANSIM series for the calendar month immediately preceding the month in which the calculation date falls. [Effective January 1, 2012]

.09 The actuary should determine from the CANSIM series the following four factors:

| CANSIM Series | Description | Factor |
|---|---|---|
| V122487 | average long (>10 yrs) Government of Canada bond yields (final Wednesday of month) | $G_L$ |
| V122544 | long-term Government of Canada benchmark bond yield, annualized (final Wednesday of month) | $b_L$ |
| V122553 | long-term Government of Canada real return bond yield, annualized (final Wednesday of month) | $r_L$ |
| $(1 + b_L)/(1 + r_L) - 1$ | break-even inflation rate | BEIR |

Note that the factors determined above do not reflect the reported CANSIM series, but the annualized value of the reported figure. [Effective January 1, 2012]

**Inflation and indexing**

.10 The actuary should calculate the projected benefit obligation for a pension that is fully indexed to increases in the Consumer Price Index using an assumed inflation rate of EI. For pensions that are partially indexed to increases in the Consumer Price Index, the actuary should derive inflation rates in a like manner by applying to the stipulated inflation rates the partial indexing formula of the plan. [Effective January 1, 2012]

.11 The actuary should determine the assumed rate of inflation EI as:

- First 20 years $EI_{0\text{-}20}$ = BEIR
- After 20 years $EI_{20+}$ = 2.25%

EI should be rounded to the nearest multiple of 0.01%. [Effective January 1, 2012]

.12 Where increases in pensions are related to increases in the average wage index, the actuary should assume that the average wage index will increase at rates that are one percentage point higher than EI. [Effective January 1, 2012]

.13 The capitalized value of a fully- or partially-indexed pension should be at least equal to the capitalized value applicable to a non-indexed pension in the same amount and having similar characteristics. [Effective January 1, 2012]

.14 Where the plan so provides, the indexing in any of the above arrangements may be modified by:

- Applying a maximum or minimum annual increase, with or without carry forward of excesses or deficiencies to later years; or
- Prohibiting a decrease in a year where the application of the formula would otherwise cause a decrease.

The actuary would then adjust the expected inflation rate for a year to reflect the probability and extent of modification for that year.

.15 If the pension is indexed using an “excess investment return” approach, the expected indexation rate would be determined using the “floor rate” and the interest rates determined in accordance with paragraph 4530.18 to produce an expected indexation rate consistent with excess interest situations.

.16 For a pension in a plan that has a policy or a history of indexing on an ad hoc basis, the actuary would determine an indexation rate consistent with the indexing policy or history.

**Interest rates**

.17 The actuary should calculate two interest rates, one applicable to the first 20 years following the calculation date, and the second one applicable to all years thereafter. [Effective January 1, 2012]

.18 The actuary should determine the interest rates as:

- First 20 years $i_{0\text{-}20} = G_L + 0.50\%$
- After 20 years $i_{20+} = 5.50\%$

Prior to calculating the capitalized value, the actuary should round the rates of interest determined in accordance with this paragraph to the nearest multiple of 0.1%. [Effective January 1, 2012]

.19 The actuary should calculate the capitalized value of a pension using a two-tier interest rate of:

- $i_{0\text{-}20}$ for the first 20 years; and
- $i_{20+}$ thereafter. [Effective January 1, 2012]

**Assumptions selected by client**

.20 The actuary would obtain instructions from the client with respect to assumptions dependent upon the interpretation of applicable law.

.21 The actuary would report his or her reliance on an assumption selected by the client.

## 4540 Reporting: external user report

.01 Here is model text if the actuary reports without reservation with regard to marriage breakdown:

> I have determined the capitalized value of the pension benefits and prepared this report in accordance with accepted actuarial practice in Canada, for purposes of settlement of a division of pension benefits resulting from marriage breakdown under the [Family Law Act] of [province]. In my opinion, the capitalized values are appropriate for this purpose.
>
> Respectfully submitted,
>
> [actuary]
>
> Fellow, Canadian Institute of Actuaries

# 4600 Calculation of Criminal Rate of Interest

## 4610 Scope

.01 The standards in section 4600 apply to an actuary's advice when determining whether the interest rate for a particular agreement or arrangement is a "criminal rate".

.02 The Criminal Code of Canada defines "criminal rate" as meaning an effective annual rate of interest calculated in accordance with generally accepted actuarial practices and principles that exceeds 60 percent on the credit advanced under an agreement or arrangement.

## 4620 Data

.01 The actuary should ascertain or make assumptions regarding the quantum and timing of all amounts actually or deemed to be advanced as well as all amounts actually or deemed to be repaid either as principal or as "interest" as defined in the Criminal Code. [Effective December 31, 2013]

.02 The actuary should report all data used in the calculation, and their sources. [Effective February 1, 2018]

.03 If data are not clear from the initial terms of the engagement, the actuary would obtain clarification from his or her client (for example, whether or not a particular item falls within the statutory definition of "interest," or the timing of a particular payment that could be made on various alternate dates).

## 4630 Method

.01 The actuary should calculate and report the effective rate of interest compounded annually, "i", such that the following equality is established:

$$\sum_{r=1}^{m} A_r \times (1+i)^{t_r} = \sum_{s=1}^{n} B_s \times (1+i)^{t_s}$$

where

- m is the total number of payments advanced by the lender to the borrower;
- n is the total number of payments repaid by the borrower to the lender;
- $A_r$ is the amount of the $r^{th}$ payment advanced by the lender;
- $B_s$ is the amount of the $s^{th}$ payment repaid by the borrower, consisting of principal, "interest" as defined, or a combination of both;

- $t_r$ is the period measured in years (including fractional parts of a year) between the time that the $r^{th}$ payment is advanced by the lender to the borrower and the time on which the final repayment is made by the borrower to the lender; and
- $t_s$ is the period measured in years (including fractional parts of a year) between the time that the $s^{th}$ payment is repaid by the borrower to the lender and the time on which the final payment is made by the borrower to the lender. [Effective December 31, 2013]

.02 If the calculation produces only one result, then the actuary would report that result. If the calculation produces more than one result, then the actuary would report only those that are positive and real, or zero.

.03 The formula in paragraph 4630.01 applies in most, but not all, situations.

# 4700 Reporting

## 4710 External user report

.01 For work pursuant to part 4000, any external user report that is prepared should:

- Identify the person for whom the report was prepared and, if that person is acting on behalf of a party to the dispute, that party to the dispute;
- State the effective date of the report and the effective date of any actuarial opinions and calculations in the report;
- Describe any terms of the appropriate engagement that are material to the actuary's work, including the role of the actuary, the scope and purpose of the work, any limitations or constraints on the work and any stipulated assumptions or methods;
- Where the actuary is aware of circumstances where the independence of his or her expert opinion may reasonably be questioned, disclose such circumstances;
- Disclose the results of the work;
- Describe the data, methods, and assumptions used for the work, including the terms and the amounts of the payments relevant to any calculations, for each of the scenarios presented in the report;
- Identify the assumptions and methods that are constrained by law, regulation, court practice, or established legal principles relevant to the work;
- Identify the differences between scenarios where the results of multiple scenarios are presented;
- Identify any margins for adverse deviations that are included, except where the assumption or method is mandated by law, regulation, court practice, or established legal principles relevant to the work, and the rationale for inclusion of any identified margins for adverse deviations;
- Describe every contingency that has been taken into account, and state that there may be other contingencies that could have a positive or negative effect that have not been taken into account;
- Disclose the extent of the actuary's reliance on others;
- List the sources of information on which the actuary has relied; and
- Include any other information required in accordance with the rules of civil procedure, the rules of law, or other rules that may be applicable for the relevant jurisdiction. [Effective February 1, 2018]

.01.1 Notwithstanding paragraph 1710.01, the actuary is not required to provide an opinion on assumptions which are stipulated by the terms of engagement provided such assumptions are plausible in accordance with paragraph 4320.03. [Effective February 1, 2018]

.01.2 Notwithstanding paragraph 1710.01, the actuary is not required to provide an opinion on assumptions or methods described in paragraph 4340.01 which are within the range of accepted actuarial practice pursuant to paragraph 4340.01. [Effective February 1, 2018]

.02 The actuary's external user report should be sufficiently detailed to enable another actuary to assess the reasonableness of the results. [Effective December 31, 2013]

.03 The actuary would prepare any draft reports and other documentation, taking into account the potential disclosure of such documents that may be required as part of the dispute resolution proceedings.

.04 Where the actuary reports the results of a capitalized value calculation without reservation, the disclosure wording that may be used is:

> I have determined the capitalized value of those aspects of the pecuniary damages described herein and prepared this report in accordance with accepted actuarial practice in Canada. It is my opinion that the assumptions and methods for which I have taken responsibility are appropriate in the circumstances of this case and for the purpose of this report.
>
> Respectfully submitted,
>
> [actuary]
>
> Fellow, Canadian Institute of Actuaries

**Reporting with reservation**

.05 Reporting with reservation or stating that the reporting requirements have not been followed would not excuse an actuary from these reporting standards.

.06 Notwithstanding paragraph 4340.01, the circumstances affecting the work may result in deviation from accepted actuarial practice in Canada. For example, the terms of the engagement may require that the actuary use an assumption that is outside of the range that the actuary considers plausible, or that the actuary use a method that the actuary considers is not appropriate, or that the actuary assist counsel with challenging a specific interpretation of the law. In such case, the actuary would disclose such deviation in the report.

**New information**

.07 Notwithstanding paragraph 1420.01, where an event occurs, such as the availability of new information, after the actuary has completed his or her report, the actuary would consider the potential effect of such event on his or her work, and would advise his or her client on a timely basis, if appropriate and subject to the terms of the engagement.

**Disclosure of other expert's report**

.08 The external user report need not disclose any error or shortcoming that the actuary identifies in the report of another actuary or other expert witness.

## 4720 Internal user report

.01 Unless an internal user report conforms to the recommendations for an external user report, an internal user report should state that it is not to be given to an external user. [Effective December 31, 2013]

.02 For the purpose of determining whether or not the work is in accordance with accepted actuarial practice, an internal user report continues to be an internal user report even if, in breach of the statement required by paragraph 4720.01, it is given to an external user or utilized in the dispute resolution proceeding.

# 6000 – Post-Employment Benefit Plans

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# 6100 Scope

.01 The standards in part 6000 apply as follows:

- Section 6200 applies to advice that an actuary provides regarding the funding, funded status, financial position, or the financial condition with respect to a post-employment benefit plan, except where such advice relates to items covered by section 6300 or section 6400;
- Section 6300 applies to advice that an actuary provides regarding the funding, funded status, financial position, or the financial condition with respect to the wind-up, in full or in part, of a post-employment benefit plan; and
- Section 6400 applies to advice that an actuary provides regarding financial reporting of a post-employment benefit plan's costs and obligations in the employer's financial statements, or the post-employment benefit plan's financial statements, or the financial statements of a trust associated with the post-employment benefit plan, where the calculations and advice are provided in accordance with an applicable financial reporting standard.

For the purposes of determining whether section 6300 applies, the wind-up of a post-employment benefit plan would involve the termination of future benefits for some or all plan members, the termination of some or all plan benefits and the distribution of some or all of the plan's assets, if any. Examples of work with respect to wind-ups include the calculation of benefit plan costs or entitlements:

- When a benefit trust is being replaced with an insured arrangement;
- Where assets from a company's liquidation may be provided as cash in lieu of employee benefit plans upon insolvency or upon the wind-up of a post-employment benefit plan trust; and
- Where the plan sponsor offers cash in lieu of future benefits.

The cessation of benefit accruals or termination of a post-employment benefit plan, not involving the termination of plan benefits and distribution of plan or other assets, would not constitute a plan wind-up. For example, the closure of a post-employment benefit plan to future new members would not constitute a wind-up.

.02 The standards in sections 6200 through 6400 apply to an actuary's advice with respect to a post-employment benefit plan that provides benefits other than pension benefits to the plan's members and their covered spouses and dependants, whether funded or not, whether insured or not, and whether in the private or public sector. Such plans include any arrangement that provides:

- Long-term employee benefits (and compensated absences) including long-service leave or sabbatical leave, jubilee or other long-service benefits, long-term disability benefits, and profit sharing, bonuses, and other deferred compensation such as retiring allowances that are to be paid far enough into the future to be considered to be a post-employment benefit (long-term employee benefits would generally include benefits that commence or continue to be payable more than 12 months after the initial incident that caused the benefit to be paid; for example, long-term disability benefits);
- Short-term employee benefits (and compensated absences) that accumulate or vest, such as accumulated sick days or vacation days that can be saved in one period and drawn or paid out in another period;
- Benefits to which plan members become entitled when they are no longer actively at work, such as post-employment life insurance or post-employment health care; and/or
- Termination benefits payable to an employee as a result of termination of employment, if some or all of the benefits are payable on or after the date of termination of employment.

.03 The standards in sections 6200 through 6400 do not apply to an actuary's advice with respect to any arrangement that is:

- A plan within the scope of part 3000 Pension Plans, section 2800 Public Personal Injury Compensation Plans, or part 7000 Social Security Programs;
- A short-term employee benefit plan such as wages, salaries, and social security contributions, paid annual vacation/leave and paid sick leave, profit sharing and bonuses (if payable within 12 months of the end of the period to which they relate) and non-monetary benefits (such as medical care, housing, cars, and free or subsidized goods or services) for current employees that do not accumulate or vest;
- A post-employment benefit plan whose benefits are all guaranteed by a life insurer; or
- A social security program such as the Canada Pension Plan and Québec Pension Plan.

.04 The standards in sections 6200 through 6400 also apply to an actuary's advice to an employer with respect to the self-insured element of a public personal injury compensation plan that covers the employees of that employer; for example, self-insured workers' compensation plans.

.05 An actuary's advice with respect to a post-employment benefit plan may relate to items such as:

- Required or recommended funding of the plan;
- Projected cash flows of the plan with or without future new entrants;
- Determination of the actuarial present value of the projected or accrued benefits of the plan with or without future new entrants;
- Determination of amounts for financial reporting of a plan's cost; or
- Determination of the obligations for reporting in the employer's financial statements, or the plan's financial statements, or the financial statements of a trust associated with the plan.

# 6200 Advice on the Funding, Funded Status, Financial Condition, or Financial Position of a Post-Employment Benefit Plan

.01 This section 6200 applies to advice that an actuary provides regarding the funding, funded status, financial position, or the financial condition with respect to a post-employment benefit plan, except where such advice is with respect to:

- The wind-up, in full or in part, of a post-employment benefit plan; or
- The financial reporting of a post-employment benefit plan's costs and obligations in the employer's financial statements, or the post-employment benefit plan's financial statements, or the financial statements of a trust associated with the post-employment benefit plan, where the calculations and advice are provided in accordance with an applicable financial reporting standard.

## 6210 General

.01 The actuary's advice with respect to a post-employment benefit plan should take account of the circumstances affecting the work. [Effective February 1, 2018]

.02 The actuary should select an actuarial cost method that is consistent with the circumstances affecting the work. [Effective February 1, 2018]

.03 The actuary should select an asset valuation method, where applicable, that is consistent with the circumstances affecting the work. [Effective February 1, 2018]

.04 The actuary's advice with respect to a post-employment benefit plan should take account of the post-employment benefit plan's benefit provisions at the calculation date, except that the actuary may reflect a pending amendment to the post-employment benefit plan that increases the value of its benefits. [Effective June 30, 2013]

.05 The actuary's advice with respect to a post-employment benefit plan should take account of all relevant data, including historical claims experience. [Effective June 30, 2013]

.06 The actuary should select assumptions that are consistent with the circumstances affecting the work. [Effective February 1, 2018]

.07 The actuary should determine the next calculation date and the actuary's advice should cover at least the period between the calculation date and the next calculation date. [Effective June 30, 2013]

**Circumstances affecting the work**

.08 For the purposes of section 6200, the circumstances affecting the work would include:

- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

.09 The terms of an appropriate engagement would specify whether the actuary's advice relates to:

- The funded status or the funding of the post-employment benefit plan or a combination thereof;
- The calculation of the actuarial present value of future benefits payable from a post-employment benefit plan;
- The calculation of the expected future cash flows from a post-employment benefit plan; or
- Other financial information with respect to the post-employment benefit plan that is actuarial in nature.

.10 The terms of an appropriate engagement may specify the use of a particular actuarial cost method and/or a particular asset valuation method.

.11 The terms of an appropriate engagement may specify that the actuary's advice may be related to the entire plan, or to a portion of the plan, or to a selected group of members only.

**Actuarial cost methods**

.12 Actuarial cost methods include, among others:

- Cost allocation methods, which allocate the actuarial present value of projected benefits among time periods, including attained age actuarial cost methods, entry age actuarial cost methods, aggregate actuarial cost methods, and individual level premium actuarial cost methods;
- Benefit allocation methods, which allocate a portion of the actuarial present value of projected benefits to a time period, including the accrued benefit actuarial cost method, the unit credit actuarial cost method, and the projected unit credit actuarial cost method; and
- Forecast actuarial cost methods, which allocate a portion of the actuarial present value of projected benefits to the forecast period based on:
    - The actuarial present value, at the calculation date, of projected benefits at the end of the forecast period, including, if appropriate, benefits for those who are expected to become members between the calculation date and the end of the forecast period;

minus

- The actuarial present value of projected benefits at the calculation date;

plus

- The actuarial present value, at the calculation date, of benefits expected to be paid during the forecast period.

**Asset valuation methods**

.13 If the plan has assets, the use of an asset valuation method that produces an asset value different from market value may be appropriate depending on the circumstances affecting the work. For example, the use of a smoothed asset value may be appropriate to moderate the volatility of contribution rates for purposes of advice on funding.

.14 The value of assets may be, subject to specific requirements for different types of valuation, any of:

- Their market value;
- Their market value adjusted to moderate volatility in investment returns;
- The present value of their cash flows after the calculation date; and
- Their value assuming a constant rate of return to maturity in the case of illiquid assets with fixed redemption values.

**Plan provisions**

.15 The actuary would determine the plan provisions with sufficient accuracy for the purposes of the valuation. Sources of information on plan provisions include:

- Current plan documents;
- Funding or underwriting arrangements;
- Collective bargaining agreements;
- Information regarding past practices;
- Cost-sharing arrangements between the plan sponsor(s) or plan administrator and plan members; and
- Communication between the plan sponsors or plan administrator and the plan members.

Prior plan provisions may be needed to analyze claims information from periods prior to the calculation date.

.16 The actuary would consider all benefits that are to be payable under the post-employment benefit plan and would include provision for all such benefits expected to be paid under the plan.

**Anticipated amendment or deferred recognition of a pending amendment**

.17 The actuary's advice on a post-employment benefit plan may, subject to disclosure, reflect an expected amendment to the plan if the amendment is definitive or virtually definitive, and the amendment increases the plan's benefits. For example, the plan sponsor may have a regular pattern of increasing the dental fee guide schedules that the post-employment benefit plan uses for its benefit limit. The actuary's advice would normally reflect continued adoption of such increased limits.

.18 If, at the calculation date, an amendment to the post-employment benefit plan is definitive or virtually definitive, and:

- If the effective date of the amendment is during the period for which the report gives advice on funding, then the advice on funding up to the effective date may disregard the amendment, but the advice on funding after the effective date would take the amendment into account; or
- If the effective date of the amendment is after the period for which the report gives advice on funding, then the advice on funding may disregard the amendment.

.19 The effective date of the amendment is the date at which the amended benefits take effect, as opposed to the date when the amendment becomes either definitive or virtually definitive.

.20 If an actuary is aware of an expected amendment to the post-employment benefit plan, but does not reflect the amendment in the work, then the actuary would report the event in accordance with the requirements for the disclosure of subsequent events.

**Data**

.21 In addition to the current plan membership and asset data, if relevant, the actuary would collect information on historical claims experience, such as nature of absence and benefit levels. Data may come from the plan sponsor or plan administrator or other sources, such as insurance carriers, brokers, or external third-party plan administrators.

.22 In identifying the data needed, the actuary would bear in mind the pertinent benefits (e.g., those applicable during retirement, disability, or following termination of employment). If applicable, the actuary may obtain claims data split by plan, by age, by location, by status (retiree, inactive, spouse, etc.) and by type of expense (drug, hospital, payment for loss of income, etc.).

.23 Where appropriate, in analyzing any relevant historical claims data, the data would be adjusted to reflect the trend in the cost of benefits between the reference period and the calculation date. Where appropriate, the actuary would also adjust past experience results to reflect non-recurring influences such as changes in the benefits offered, significant changes in the demographics of the group, changes in government programs, or unusual claims.

.24 Available data may have limited value or low credibility. Where the benefit cost for former members or current retirees is not fully credible or does not reasonably represent the likely benefit cost for similar future groups, the actuary may rely on the experience of other members or other sources of data that the actuary considers reasonable and relevant. Such other data would be adjusted appropriately for the expected differences between these groups and the group from which the data were drawn.

.25 The actuary may project data, including membership data and data with respect to claim costs from the effective date of the data to the calculation date, using appropriate extrapolation techniques. The actuary would not normally extrapolate membership data more than three years from the effective date of the membership data. The actuary may also use recent credible claims experience in the extrapolation.

**Assumptions**

.26 In establishing the assumptions, the actuary would usually assume the continuation of the current provisions and practices of government programs, but anticipate the effect of legislative changes scheduled to be implemented at a future date. The actuary may also present alternative results reflecting different scenarios of the future. If the purpose of the valuation is such that the effect of anticipated future government changes is to be taken into account, the actuary would make appropriate assumptions in respect thereof.

.27 In determining claim costs assumptions, where necessary, the actuary would consider available claims experience with regards to items such as:

- Claimant age, member status, coverage category, and benefit type;
- Credibility; and
- Relevance to future periods and future benefit provisions.

.28 The assumption with respect to the future claims trend rate, where necessary, may be divided into short-term and longer-term components. The short-term component would often be based on the level experienced in the recent past by the plan and plan members. The longer-term component would be consistent with the assumption regarding future changes in benefit programs and general economic conditions such as nominal Gross Domestic Product growth. The actuary would determine the period of time required to transition from the short-term trends to the longer-term trends and when the short-term trends may need to be revised.

.29 In situations where there is not sufficient data with respect to claim costs—for example if the post-employment benefit plan has only a small number of members or does not yet have any members in payment status—the actuary may develop the applicable assumptions based on experience with other similar plans.

**Discount rate**

.30 For post-employment benefit plans that are not funded, in selecting the best estimate assumption for the discount rate, the actuary would reflect the yields on fixed income investments, considering the expected future benefit payments of the plan and the circumstances affecting the work.

**Expenses**

.31 The actuary's advice on a post-employment benefit plan would take account of expenses, including whether or not they are expected to be paid from the post-employment benefit plan's assets, if any.

.32 The actuary would consider, as part of the claims experience, the administration costs related to the adjudication of the claims including any related general administration expenses charged by the party adjudicating the claims and all applicable taxes. The actuary would also consider other expenses related to the post-employment benefit plan.

**Next calculation date**

.33 The next calculation date is the latest date for which the actuary considers the advice with respect to a post-employment benefit plan to be applicable. The actuary would take into consideration the terms of an appropriate engagement in determining the next calculation date, but the next calculation date would not normally be more than three years after the current calculation date.

## 6220 Advice on Funding or Funded Status

.01 If the actuary is providing advice with respect to the funding and/or funded status of a post-employment benefit plan that is pre-funded in some manner, the actuary should select either best estimate assumptions or best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, required by the terms of an appropriate engagement. [Effective February 1, 2018]

.02 Advice on funding or funded status may include:

- Advice regarding the amount of assets to be earmarked, whether or not segregated, to cover post-employment benefit commitments;
- Advice regarding a systematic method of accumulating funds to provide the post-employment benefit commitments; or
- Advice on the funding implications of a plan amendment.

.03 The terms of an appropriate engagement may specify applicable objectives of funding, which may include a formal or informal funding policy.

.04 Objectives of funding specified by the terms of an appropriate engagement may include considerations such as the security of benefits and related provisions for adverse deviations, the allocation of contributions among time periods, and/or inter-generational equity.

.05 Depending on the circumstances affecting the work, the actuary's advice on funding may describe a range of contributions.

**Discount rate**

.06 If the actuary's advice relates to the funding or funded status of a post-employment benefit plan, in selecting the best estimate assumption for the discount rate, the actuary may either:

- Take into account the expected investment return on the assets, if any, of the post-employment benefit plan at the calculation date and the expected investment policy after that date; or
- Reflect the yields on fixed income investments, considering the expected future benefit payments of the post-employment benefit plan and the circumstances affecting the work.

.07 In establishing the discount rate assumption, the actuary would assume that there will be no additional returns achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy except to the extent that the actuary has reason to believe, based on relevant supporting data, that such additional returns will be consistently and reliably earned over the long term.

## 6230 Reporting: External User Report

.01 An external user report on work pursuant to section 6200 should:

- Describe any significant terms of the appropriate engagement that are material to the actuary's advice;
- Include the calculation date, the report date, and the next calculation date, if applicable;
- Describe the sources of membership data, plan provisions, the post-employment benefit plan's assets, if any, and historical claims data, if any, and the dates at which they were compiled;
- Describe the membership data and any limitations thereof, and any assumptions made about missing or incomplete membership data;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Describe the assets, if any, including their market value and a summary of the assets by major category;
- Describe the post-employment benefit plan's provisions, including the identification of any pending definitive or virtually definitive amendment of which the actuary is aware, and the manner in which any such amendments have been reflected in the actuary's advice;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, or, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- State the type of valuation undertaken under the terms of the appropriate engagement;
- For any one valuation undertaken, describe and quantify the gains and losses between the prior calculation date and the calculation date;
- For any one valuation undertaken, report the effect on the key results of the valuation of using a discount rate 1.0% lower than that used for the valuation; and
- For any one valuation undertaken, where relevant, report the effect on the key results of the valuation of using an assumed future claims trend rate 1.0% higher than that used for the valuation. [Effective February 1, 2018]

.02 For each valuation undertaken by the actuary, the external user report should:

- If there is no provision for adverse deviations, include a statement to that effect;
- Describe the claims administration expenses or other plan expenses that are included in the work; and
- Report the results of the valuation. [Effective March 31, 2015]

.03 An external user report that provides advice on funding should:

- Describe the rationale for any assumed additional returns, net of investment management expenses, from an active investment management strategy, included in the discount rate assumption;
- Describe the determination of contributions or a range of contributions between the calculation date and the next calculation date; and
- If contributions are fixed by the terms of the post-employment benefit plan or other governing documents (e.g., a collective agreement), then either:
    - Report that the contributions are adequate to fund the post-employment benefit plan in accordance with its terms; or
    - Report that the contributions are not adequate to fund the post-employment benefit plan in accordance with its terms; and
        - Describe the contributions required to fund the post-employment benefit plan adequately in accordance with its terms;
        - Describe one or more possible ways in which benefits may be reduced such that the contributions would be adequate to fund the post-employment benefit plan in accordance with its terms; or
        - Describe a combination of increases in contributions and reductions in benefits that would result in the funding being in accordance with its terms. [Effective June 30, 2013]

.04 An external user report should provide the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement as to assumptions, which should usually be, "In my opinion, the assumptions are appropriate for the purpose(s) of the valuation(s).";
- A statement as to methods, which should usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose(s) of the valuation(s)."; and
- A statement as to conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective June 30, 2013]

.05 An external user report should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation. [Effective June 30, 2013]

**Significant terms of appropriate engagement**

.06 Significant terms of the appropriate engagement may include matters such as:

- The use of a specified actuarial cost method;
- The use of a specified asset valuation method, where applicable;
- The exclusion of benefits for purposes of a valuation;
- The extent of margins for adverse deviations, if any, to be included in selecting assumptions; and
- The funding policy, which may include pay-as-you-go funding.

**Membership data**

.07 The actuary would describe any assumptions and methods used in respect of insufficient or unreliable membership or census/employee data.

.08 The actuary may describe limitations on the tests conducted in the review of the data which has been determined to be sufficient and reliable for purposes of the valuation(s). For example, the actuary may describe that the data tests will not capture all possible deficiencies in the data and reliance is also placed on the certification of the plan sponsor or plan administrator as to the quality of the data.

**Methods**

.09 For each valuation included in the external user report for which there was a prior valuation, the description of the actuarial cost method would include a description of any change to the actuarial cost method used in the prior valuation and the rationale for such change.

.10 For each valuation included in the external user report for which there was a prior valuation, the description of the method to value the assets, if any, would include a description of any change to the asset valuation method used in the prior valuation and the rationale for such change.

**Types of valuations**

.11 An external user report with respect to a post-employment benefit plan would normally include information on only one valuation, which is typically a going concern valuation. To the extent that the external user report provides information with respect to multiple valuations, the actuary would include information with respect to the types of valuations required by the circumstances affecting the work.

**Assumptions**

.12 For each valuation included in the external user report for which there was a prior valuation, the description of assumptions would include a description of any changes to the assumptions used in the prior valuation.

.13 For each valuation included in the external user report, the description of the assumptions would, if appropriate for the circumstances affecting the work, describe:

- The development of the assumed claim costs;
- The claims experience information used to develop the assumed claim costs; and
- The extent to which the claims experience information has influenced the selection of the assumed future cost trend rates.

**Relevant results of the valuation**

.14 The results of the valuation will depend on the purpose(s) of the valuation and the circumstances affecting the work. The results of the valuation may include such information as:

- The present value of projected benefits;
- The present value of projected benefits allocated to periods up to the calculation date;
- The projected cash flows; and/or
- The service cost for periods following the calculation date.

**Reporting gains and losses**

.15 The reported gains and losses for a valuation would include the gain or loss due to a change in the actuarial cost method or a change in the method for valuing the assets, if any, and each significant change in assumptions and plan provisions determined at the calculation date. If an amendment to the post-employment benefit plan prompts the actuary to change the assumptions, the actuary may report the combined effect of the amendment and the resultant change in assumptions.

**Sensitivity analysis**

.16 When following the recommendations to illustrate the effect of a change in discount rate, trend rate or other assumption on a valuation, the actuary would maintain all other assumptions and methods as used in the underlying valuation.

**Reference to other reports**

.17 The disclosures required in the external user report may be incorporated by reference to another actuarial valuation report prepared in accordance with accepted actuarial practice with the same calculation date.

**Statements of opinion**

.18 Where different statements of opinion apply in respect of different purposes of the valuation, the above requirements may be modified but would be followed to the extent practicable.

.19 While a separate statement regarding assumptions would usually be included in respect of each purpose of the valuation, the statements regarding assumptions may be combined where the statements do not differ among some or all of the valuation's purposes. The report would indicate clearly which statement regarding assumptions applies to each of the valuation's purposes.

.20 While a separate statement regarding methods would usually be included in respect of each purpose of the valuation, the statements regarding methods may be combined where the statements do not differ between some or all of the valuation's purposes. The report would indicate clearly which statement regarding methods applies to each of the valuation's purposes.

# 6300 Full or Partial Wind-up Valuation

.01 This section 6300 applies to advice that an actuary provides with respect to the wind-up (termination of future benefits for some or all members, the termination of some or all plan benefits, and the distribution of some or all of the plan's assets, if any), in full or in part, of a post-employment benefit plan. Examples of work with respect to wind-ups include the calculation of benefit plan costs or entitlements:

- When a benefit trust is being replaced with an insured arrangement;
- Where assets from a company's liquidation may be provided as cash in lieu of employee benefit plans upon insolvency or upon the wind-up of a post-employment benefit plan trust; and
- Where the plan sponsor offers cash in lieu of future benefits.

.02 This section 6300 does not apply in situations where the post-employment benefit plan is no longer available for future members but accrued benefits are not being settled.

## 6310 General

.01 The actuary's advice with respect to a post-employment benefit plan that is being wound up, in full or in part, should take account of the circumstances affecting the work, and assume the plan is being wound up at the calculation date. [Effective February 1, 2018]

.02 The actuary should take account of subsequent events up to the cut-off date. [Effective June 30, 2013]

.03 The post-employment benefit plan's assets, if any, should be valued at liquidation value. [Effective June 30, 2013]

.04 The actuary should take account of the post-employment benefit plan's benefit provisions at the calculation date, except that the actuary may reflect a pending amendment to the post-employment benefit plan. [Effective June 30, 2013]

.05 The actuary's advice with respect to a post-employment benefit plan should take account of all relevant data, including historical claims experience. [Effective June 30, 2013]

.06 The actuary should select assumptions that:

- Are either best estimate assumptions or are best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, required by the terms of an appropriate engagement;
- Are selected as at the cut-off date; and
- Reflect the expected method of benefit settlement. [Effective February 1, 2018]

.07 Unless it is expected that expenses will not be paid from the post-employment benefit plan's assets, the actuary should select an explicit assumption regarding the expenses of wind-up and either offset the resulting expense provision against the post-employment benefit plan's assets, if any, or add the resulting expense provision to the post-employment benefit plan's liabilities. Expenses may include administration costs (which may be incurred from a third-party administrator or an insurer), or other expenses. [Effective June 30, 2013]

**Scope**

.08 This section does not prescribe the manner in which:

- Benefit entitlements would be determined;
- Funding obligations would be determined; or
- The post-employment benefit plan's assets, if any, would be allocated between the employer(s) and the members or among members themselves.

.09 Rather, those issues would be determined in accordance with the law, the plan provisions or governance documents, or by an entity empowered thereunder to make that determination. It may be appropriate, however, to use the results of the valuation to address one or more of those issues, or to disclose their resolution in the report.

**Circumstances affecting the work**

.10 For the purposes of section 6300, the circumstances affecting the work would include:

- Whether the actuary's advice relates to the funding, funded status, financial position, or the financial condition of the post-employment benefit plan, or a combination thereof;
- Whether the actuary's advice relates to the present value of expected future benefits under the post-employment benefit plan;
- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

**Cut-off date**

.11 The cut-off date would be the date up to which subsequent events would be recognized in the valuation.

**Partial wind-up**

.12 A partial wind-up occurs when a subset of the members terminates membership in circumstances that require wind-up with respect to those members. Such wind-up does not apply to the continuing members, although it may also be necessary, for other reasons, to value the benefits of the continuing members.

.13 The standards for a partial wind-up are the same as the standards for a full wind-up.

**Assumptions**

.14 The selection of the assumptions would normally be determined in accordance with the law (if applicable), the plan provisions or governance documents, or by an entity empowered thereunder to make that determination.

.15 The actuary may need to consider various appropriate tax treatments for calculations prepared for wind-ups of post-employment benefit plans.

**Expenses**

.16 The actuary would consider as part of the claims experience the administration costs related to the adjudication of the claims, including any related general administration expenses charged by the party adjudicating the claims and all applicable taxes. The actuary may also consider other expenses related to the post-employment benefit plan.

**Plan provisions**

.17 The actuary would determine the plan provisions with sufficient accuracy for the purposes of the valuation. Sources of information on plan provisions include:

- Current plan documents;
- Funding or underwriting arrangements;
- Collective bargaining agreements;
- Information regarding past practices;
- Cost-sharing arrangements between the plan sponsor(s) or plan administrator and plan members; and
- Communication between the plan sponsors or plan administrator and the plan members.

Prior plan provisions may be needed to analyze claims information from periods prior to the calculation date.

.18 The actuary would consider all benefits that are to be payable under the post-employment benefit plan and would include provision for all such benefits expected to be paid under the plan.

## 6320 Reporting: External User Report

.01 If a previous external user report was prepared with respect to the wind-up, the actuary should describe and quantify the gains and losses between the prior calculation date and the calculation date. [Effective June 30, 2013]

.02 An external user report should:

- Include the wind-up date, the calculation date, the cut-off date, and the report date;
- Describe the events precipitating the wind-up, of which the actuary is aware, that affect the terms of the wind-up, the benefit entitlements, or the valuation results;
- Describe the sources of membership data, plan provisions, and the post-employment benefit plan's assets, if any, and historical claims data, if any, and the dates at which they were compiled;
- Describe the membership data and any limitations thereof, including any assumptions made about missing or incomplete membership data;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Subject to any applicable privacy legislation:
  - Include the detailed individual membership data; or
  - Include an offer to provide detailed individual membership data on request to the plan sponsor or the plan administrator;
- Describe the liquidation value of the assets, if any, and a summary of the assets by major category;
- Describe the post-employment benefit plan's provisions, including an identification of:
  - Any amendments made since any previous external user report with respect to the plan which affect benefit entitlements; and

- Any subsequent events or post-wind-up contingent events, of which the actuary is aware, which affect benefit entitlements;

- Report the explicit assumption regarding the expenses of wind-up or justify the expectation that expenses will not be paid from the post-employment benefit plan's assets, if any;
- Report the funded status at the calculation date, and state whether an updated report will be required in the future;
- If applicable, report the settlement value for each plan member when settlement is to be made by cash payments to the member;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work and, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- State that the funded status at settlement may differ from that contained in the report, unless the report includes the funded status at the time of final settlement;
- If the actuary relies upon direction concerning unclear or contentious issues:
  - Describe each such issue;
  - Describe the direction relied upon or, where appropriate, a summary thereof; and
  - Identify the person providing such direction and the basis of authority of such person;
- Describe any post-wind-up contingent events that may affect the distribution of the post-employment benefit plan's assets, if any;
- Describe whether a recalculation of the value of benefit entitlements is required at settlement;
- Where a member has a choice of settlement options that the member has not yet made, describe the assumptions made regarding such choice;
- If applicable, describe the method to allocate the post-employment benefit plan's assets among classes of members and the method to distribute surplus;

- Describe the actuary's role in calculating settlement values, including the assumptions and methods used for their calculation; and
- Describe the sensitivity of the valuation results to the post-employment benefit plan's investment policy and to market conditions between the report date and the settlement date. [Effective February 1, 2018]

.03 An external user report should include the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding assumptions, which should usually be, "In my opinion, the assumptions are appropriate for the purpose(s) of the valuation(s).";
- A statement regarding methods, which should usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose(s) of the valuation(s)."; and
- A statement regarding conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective June 30, 2013]

.04 The external user report should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation. [Effective June 30, 2013]

**Dates**

.05 The wind-up date of the post-employment benefit plan would be determined by the plan administrator or the plan sponsor or others with responsibility to wind up the plan, based on the plan provisions, the law, and the circumstances of the wind-up.

.06 The calculation date of the funded status would usually be the wind-up date.

.07 For a particular member, the date of calculation of benefit entitlement would depend on the circumstances of the wind-up and the terms of the post-employment benefit plan, and may be the date of termination of employment, the date of termination of membership, the wind-up date, or another date.

**Nature of wind-ups**

.08 The purpose of a wind-up valuation may be to determine, or to provide the basis for determining:

- The funded status of the post-employment benefit plan;
- The total value of the benefit entitlements of all members prior to taking account of the funded status of the post-employment benefit plan;
- Any required additional funding;
- The amounts and methods of determining benefit entitlements, including any adjustment required due to a wind-up deficit;
- The amount and method of distribution of a wind-up surplus; or
- Payout for loss of benefit entitlements upon insolvency.

.09 A wind-up may be complex and may take a long time. Delays may require a series of reports by the actuary. Since the funded status or other available funds for the post-employment benefit plan at the final settlement date may affect whether benefit entitlements can be settled in full, the reflection of subsequent events in each report would be critical.

**Membership data**

.10 The finality of wind-up would call for the actuary to obtain precise membership data. The membership data are the responsibility of the plan sponsor or plan administrator. However, if the actuary is working with incomplete, unreliable, or missing data the actuary would make assumptions regarding the data. The actuary may, if the circumstances dictate, include a provisional sum in the wind-up valuation with respect to missing members if the actuary believes that additional members might have benefit entitlements under the post-employment benefit plan but their membership information is missing.

**Assumptions**

.11 The selected assumptions would:

- In respect of benefit entitlements that are assumed to be settled by purchase of insurance, reflect single premium rates; and
- In respect of benefit entitlements that are assumed to be settled in some other manner, reflect the manner in which such benefits would be settled.

.12 If future benefits depend on continued employment, the actuary would consider reflecting contingent events. For example, if a member is eligible for post-retirement benefits only if the member remains in employment until age 55, the actuary may make an assumption as to the probability of this event occurring and the member's benefit may be discounted for the probability of the event occurring.

.13 Wind-up expenses usually include, but are not limited to:

- Fees related to the preparation of the actuarial wind-up report;
- Legal fees;
- Insurer or adjudicator administration expenses; and
- Custodial and investment management expenses.

.14 The actuary would either net wind-up expenses against the post-employment benefit plan's assets, if any, or add the assumed wind-up expenses to the post-employment benefit plan's liabilities in calculating the ratio of assets to liabilities as a measure of financial security of the benefit entitlements, unless the expectation is that expenses will not be paid from the post-employment benefit plan's assets, if any. However, an exception may be made for future custodial and investment management expenses, which may be netted against future investment return in the treatment of subsequent events.

**Subsequent events**

.15 Ideally, in a wind-up valuation, all subsequent events would be reflected. This ensures that the funded status is presented as fairly as possible as of the report date. However, it would be impossible to recognize subsequent events right up to the report date. Accordingly, the actuary would select a cut-off date that is close to the report date.

.16 The actuary would ascertain that no subsequent events have occurred between the cut-off date and the report date that would change the funded status significantly; otherwise the actuary would select a later cut-off date. For clarity, a subsequent event may be material yet not be so significant as to require selection of a later cut-off date.

.17 It may be appropriate to have more than one cut-off date. For example, the actuary may select one cut-off date for the active membership data and another cut-off date for the inactive membership data.

.18 Common subsequent events are:

- Contributions remitted to the plan;
- Expenses paid from the post-employment benefit plan's assets, if any;
- Actual investment return on the post-employment benefit plan's assets, if any;
- Change in assumptions;
- Corrections to the membership data; and
- Deaths of members or other significant plan experience.

**Use of another person's work**

.19 Some aspects of the wind-up may be unclear to the actuary or contentious. Examples are:

- The determination of the wind-up date;
- The members, former members, or recently terminated members to be included in the wind-up;
- Whether or not to assume salary increases or health care cost trend rate in determining benefit entitlements;
- Eligibility for benefits payable only with the consent of the plan sponsor or plan administrator;
- The liquidation value of the post-employment benefit plan's assets, if any;
- The method to allocate the post-employment benefit plan's assets, if any, among members; and
- Whether or not wind-up expenses are to be paid from the post-employment benefit plan's assets, if any, or included in the calculation of the liabilities or expected future benefits.

.20 To decide those aspects, the actuary may rely upon direction from another person with the necessary knowledge, such as legal counsel or the employer, or the necessary authority, such as the plan sponsor or plan administrator. The actuary would consider any issues of confidentiality or privilege that may arise.

**Statements of opinion**

.21 Where different statements of opinion apply in respect of different purposes of the valuation, the above requirements may be modified, but would be followed to the extent practicable.

# 6400 Financial Reporting of Post-Employment Costs

.01 This section 6400 applies to advice that an actuary provides regarding financial reporting of a post-employment benefit plan's costs and obligations in the employer's financial statements, or the post-employment benefit plan's financial statements, or the financial statements of the trust associated with the post-employment benefit plan, where the calculations and advice are provided in accordance with an applicable financial reporting standard.

## 6410 General

.01 For financial reporting purposes, the actuary should use methods and assumptions for the value of assets, if any, and post-employment benefit obligations that are appropriate to the basis of financial reporting in the employer's or post-employment benefit plan's or trust's financial statements, as applicable, and that are consistent with the circumstances affecting the work. [Effective February 1, 2018]

**Circumstances affecting the work**

.02 For the purposes of section 6400, the circumstances affecting the work would include:

- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

.03 The actuary would reflect the financial reporting standards specified by the terms of the appropriate engagement. Where financial reporting standards require methods and assumptions to be established by the preparers of the financial statements, the actuary would use the methods and assumptions specified by the preparers of the financial statements.

**Plan provisions**

.04 The actuary would determine the plan provisions with sufficient accuracy for the purposes of the valuation. Sources of information on plan provisions include:

- Current plan documents;
- Funding or underwriting arrangements;
- Collective bargaining agreements;
- Information regarding past practices;
- Cost-sharing arrangements between the plan sponsor(s) or plan administrator and plan members; and
- Communication between the plan sponsor or plan administrator and the plan members.

Prior plan provisions may be needed to analyze claims information from periods prior to the calculation date.

.05 The actuary would consider all benefits in accordance with the terms of the appropriate engagement that are to be payable under the post-employment benefit plan and would include provision for all such benefits expected to be paid under the plan.

**Anticipated amendment or deferred recognition of a pending amendment**

.06 The actuary's advice on a post-employment benefit plan may reflect an expected amendment to the plan if the amendment is definitive or virtually definitive, as appropriate based on the applicable financial reporting standard.

.07 The effective date of the amendment is the date at which the amended benefits take effect, as opposed to the date when the amendment becomes either definitive or virtually definitive.

.08 If an actuary is aware of an expected amendment to the post-employment benefit plan, but does not reflect the amendment in the work, then the actuary would report the event in accordance with the requirements for the disclosure of subsequent events.

**Data**

.09 In addition to the current plan membership and asset data, if any, the actuary would collect information on historical claims experience, such as nature of absence and benefit levels. Data may come from the plan sponsor or plan administrators or other sources, such as insurance carriers, brokers, or external third-party plan administrators.

.10 In identifying the data needed, the actuary would bear in mind the pertinent benefits (i.e., those applicable during retirement, disability, or following termination of employment). If applicable, the actuary may obtain claims data split by plan, by age, by location, by status (retiree, inactive, spouse, etc.) and by type of expense (drug, hospital, payment for loss of income, etc.).

.11 Where appropriate, in analyzing any relevant historical claims data, the data would be adjusted to reflect the trend in the cost of benefits between the reference period and the calculation date. Where appropriate, the actuary would also adjust past experience results to reflect non-recurring influences such as changes in the benefits offered, significant changes in the demographics of the group, changes in government programs, or unusual claims.

.12 Available data may have limited value or low credibility. Where the benefit cost for former members or current retirees is not fully credible or does not reasonably represent the likely benefit cost for similar future groups, the actuary may rely on the experience of active members or other sources of data that the actuary considers reasonable and relevant. Such other data would be adjusted appropriately for the expected differences between these groups and the group from which the data were drawn.

.13 The actuary may project data, including membership data and data with respect to claim costs from the effective date of the data to the calculation date, using appropriate extrapolation techniques. The actuary would not normally extrapolate membership data more than three years from the effective date of the membership data. The actuary may also use recent credible claims experience in the extrapolation.

**Assumptions**

.14 The assumptions that the actuary uses would be best estimate assumptions, unless otherwise specified in the relevant financial reporting standards or as otherwise selected by the preparers of the financial statements.

.15 Repealed

.16 In determining initial claim costs assumptions, the actuary would consider available claims experience with regards to items such as:

- Claimant age, member status, coverage category, and benefit type;
- Credibility; and
- Relevance to future periods and future benefit provisions.

.17 In situations where there are insufficient data with respect to claim costs—for example, if the post-employment benefit plan has only a small number of members or does not yet have any members in payment status—the actuary may develop the applicable assumptions based on experience with other similar plans.

.18 If the actuary is determining the assumption with respect to the future claims trend rate, where necessary, it may be divided into short-term and longer-term components. The short-term component would often be based on the level experienced in the recent past by the plan and plan members. The longer-term component would be consistent with the assumption regarding future changes in benefit programs and general economic conditions such as nominal Gross Domestic Product growth. The actuary would determine the period of time required to transition from the short-term trends to the longer-term trends.

**Expenses**

.19 The actuary's advice on a post-employment benefit plan would take account of expenses, including whether or not they are expected to be paid from the post-employment benefit plan's assets, if any.

**Benefit commitments**

.19.1 The actuary would include in the valuation of the post-employment benefit obligations the effect of a commitment to provide benefits not specified in the terms of the plan to the extent stipulated by the preparers of the financial statements.

.20 The actuary would consider, as part of the claims experience, the administration costs related to the adjudication of the claims including any related general administration expenses charged by the party adjudicating the claims and all applicable taxes. The actuary may also consider other expenses related to the post-employment benefit plan.

**Extrapolations**

.21 The actuary may extrapolate results of an earlier valuation using appropriate extrapolation techniques. The actuary would not normally extrapolate valuation results more than four years from the effective date of the membership data.

## 6420 Reporting: External User Report

.01 An external user report should:

- Include the calculation date and the report date;
- Describe the sources of membership data, plan provisions, the post-employment benefit plan's assets, if any, and historical claims data, if any, and the dates at which they were compiled;
- Describe the membership data and any limitations thereof, and any assumptions made about missing or incomplete membership data;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Describe the assets, if any, including their market value and a summary of the assets by major category and the method used to value the post-employment benefit plan's assets;
- Describe the post-employment benefit plan's provisions, including the identification of any definitive or virtually definitive pending amendment of which the actuary is aware, and whether or not such amendment has been reflected in determining the plan's obligations;
- Describe any material accounting policies relevant to the work;

- Describe any commitment to provide benefits beyond the terms of the plan reflected in the valuation of post-employment benefit obligations;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, and, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- Include all other provisions as required for disclosure purposes as per the terms of the appropriate engagement, such as:
  - Reporting the funded status at the calculation date and the applicable service cost or expected cost of new claims;
  - Describe any contingent benefits provided under the post-employment benefit plan and the extent to which such contingent benefits are included or excluded in determining the funded status and the service cost;
  - Describe any benefits that are not contingent benefits and that have been excluded in determining the funded status and the service cost;
  - Describing the method and period selected in connection with any amortizations;
  - If the valuation is an extrapolation of an earlier valuation, describe the method and any assumptions for, and the period of, the extrapolation; and
  - Stating whether or not the valuation and/or extrapolation conforms with the actuary's understanding of the financial reporting standards specified by the terms of an appropriate engagement. [Effective May 1, 2019]

.02 An external user report should provide the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding assumptions which should usually be, "In my opinion, the assumptions are appropriate for purposes of the valuation.";
- A statement regarding calculations, which should usually be, "In my opinion, the calculations have been made in accordance with my understanding of the requirements of [name financial reporting standard]"; and
- A statement regarding conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective March 31, 2015]

.03 An external user report should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation. [Effective June 30, 2013]

**Membership data**

.04 Any assumptions and methods used in respect of insufficient or unreliable membership data would be described.

**Reference to other external reports**

.05 The descriptions required in the external user report may be incorporated by reference to another actuarial valuation report prepared in accordance with accepted actuarial practice in Canada.

# 7000 – Social Security Programs

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# 7100 Scope

01. Part 1000 applies to work within the scope of this part 7000.

02. The standards in part 7000 apply to an actuary when performing or reviewing, advising on, or opining on work related to social security programs.

03. In Canada, the social security programs include the Canada Pension Plan (CPP), the Québec Pension Plan (QPP), the Old Age Security (OAS) program, and other similar plans that fall under the definition of social security program.

04. The standards in part 7000 do not apply to programs established solely or primarily for government employees, to workers' compensation programs, or to programs that primarily provide health insurance or property and casualty insurance.

# 7200 General

## 7210 Circumstances affecting the work

.01 The actuary's work on the valuation of benefit liabilities or other items contained in the financial statement of a social security program, or on the financing arrangements of a social security program, should take into account the circumstances affecting the work. [Effective February 1, 2018]

.02 The circumstances affecting the work would include

- terms of the relevant statute, regulations, and other binding authorities;
- relevant accounting standards and policies; and
- terms of an appropriate engagement under which the work is being performed;

and the circumstances affecting the work may include the financing policy of the social security program.

.03 The terms of an appropriate engagement would define the role of the actuary and the purpose of the work. The work of the actuary may include the provision of advice on the financing of the social security program, its financial condition, and any other actuarial item required under the terms of an appropriate engagement.

.04 The terms of an appropriate engagement may specify applicable policies of the social security program relevant to the work of the actuary. These policies may include a formal or informal financing policy, an accounting policy, and an investment policy.

.05 Significant terms of an appropriate engagement may stipulate one or more of

- use of a specified asset value or method of asset valuation; and
- use of a specified financing method based on a pre-determined financing objective.

.06 Objectives of financing specified by the terms of an appropriate engagement may include, but are not limited to, a specific funding target, the security of benefits, a principle of equity among generations, and/or a stable contribution rate over the long term.

.07 The actuary would take into account established practice (if relevant) when no law exists with regard to certain benefit provisions or financial measures (for example, the basis for future indexation of retirement benefits).

## 7220 Data

.01 Where sufficient, reliable, and relevant data are not available for the valuation of a specific benefit, the actuary should make appropriate assumptions and/or introduce appropriate methods to compensate for any perceived deficiencies in the data. [Effective October 15, 2017]

.02 Sufficient, reliable, and relevant data may not be available to the actuary in various circumstances, for example,

- a newly established social security program;
- the relevant statute may have been amended to provide a new or revised benefit;
- an applicable policy of the social security program may have been recently revised; or
- the social security program administration practices may have recently changed.

.03 Where the data are not sufficient, not fully reliable, and/or not sufficiently relevant to expected future experience for a specific benefit, the actuary may consider taking one or more of the following actions:

- introducing appropriate assumptions regarding missing, incomplete, or unreliable data; and
- adjusting data and historical experience for the purpose of the work, as appropriate, to remove any perceived distortions, such as the effect of historical inflation or one-time benefit changes.

.04 For a newly established or substantially changed social security program, the actuary would take into account other relevant information, including relevant experience of comparable social security programs.

# 7300 Valuation

## 7310 Methods

.01 The actuary should value the social security program assuming that it continues indefinitely as a going concern. [Effective October 15, 2017]

.02 The actuary should select an actuarial cost method that is consistent with the circumstances affecting the work. [Effective February 1, 2018]

.03 The actuary's work should take into account the benefits, relevant policies, and administration practices of the social security program, as of the calculation date, and should take into account any virtually definitive amendment to these items that is expected to have a material effect on benefits, unless the circumstances affecting the work require otherwise. [Effective February 1, 2018]

.04 The actuary would use a valuation methodology that is consistent with the financing method used for the social security program. Two methods are available:

- An open group methodology, under which contributions and benefits of both current and future participants are considered, is most appropriate for pay-as-you-go and partially funded social security programs and may also be used for social security programs that are meant to be fully funded; and
- A closed group methodology, under which only current participants are considered, with or without their assumed future benefit accruals and contributions, is only appropriate for a fully funded social security program that is meant to be fully funded.

.05 For a social security program that is meant to be fully funded, the actuary would:

- Measure the funded status of the social security program under a closed group methodology; and
- If also using an open group methodology, disclose the relationship between the social security program's current assets and the present value of its future contributions and the present values of its current and anticipated future liabilities over the projection period.

.06 Based on the circumstances affecting the work, the actuary may judge an alternative valuation methodology to be more appropriate. That approach would be used with justification communicated in the report.

.07 The projection period used in the actuary's work should be sufficient considering the circumstances affecting the work. [Effective February 1, 2018]

**Amendments and subsequent events**

.08 The actuary's valuation of the social security program would reflect all virtually definitive amendments of which the actuary is aware on the calculation date, including those amendments with an effective date after the calculation date. Where the circumstances affecting the work require otherwise, the actuary may exclude the effect of a known virtually definitive amendment, but the actuary would disclose the effect of such amendment.

## 7320 Assumptions

.01 The actuary should select assumptions that reflect the projection period and the expectation that the social security program will continue indefinitely as a going concern, but may adjust such assumptions to reflect short-term considerations, where appropriate. [Effective October 15, 2017]

.02 The actuary should select either best estimate assumptions or best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, mandated by law or by the circumstances affecting the work, and should provide the rationale for the decision made with respect to the inclusion or exclusion of margins. [Effective February 1, 2018]

.03 Where a social security program has a policy or history of providing ad hoc adjustments to contributions or to benefits, or a periodic update of parameters of the program, such as the maximum insurable earnings, the actuary should recognize such policy or history when valuing the social security program by selecting assumptions consistent with such policy or history as appropriate, unless a virtually definitive decision to discontinue such adjustments or updates has been taken by the social security program. The actuary should value the social security program with and without any assumed ad hoc adjustments. [Effective October 15, 2017]

.04 The actuary would consider any automatic balancing mechanisms that exist in a social security program when selecting the assumptions. The actuary would consider to what extent the social security program is "immunized" from the volatility of some variables by the automatic balancing mechanisms.

## 7330 Economic Assumptions

.01 The needed economic assumptions may include

- the discount rate;
- the expected rate of investment income;
- the expected investment and administrative expenses;
- the expected rate of general inflation;
- the expected real wage growth;
- the expected labour force participation rate; and
- the expected unemployment rate.

.02 The economic assumptions needed would depend on the nature of the benefits that are being valued, and may vary by year.

.03 The actuary would develop and disclose separate nominal assumptions, but may prefer to complete the calculations using rates that are net of inflation, net of expenses or net of some other factor.

.04 When determining the best estimate assumption for the expected rate of investment income, the actuary would take into account the expected pattern of risk-free rates of return, the expected additional investment return on the assets of the social security program at the calculation date, if any, and the expected investment policy after that date. The actuary would provide justification for the expected additional investment return. Possible justifications include

- additional returns over risk-free rates expected to be earned on non-risk-free fixed income assets of the type and quality owned on the reporting date and expected to be acquired pursuant to the investment policy of the social security program;
- additional returns over risk-free interest rates expected to be earned on other types of investments, including publicly traded common or preferred equities, private placements, real estate, and private equity; and
- projected composition of the investment portfolio in future years.

In establishing the assumption for the expected rate of investment income, the actuary would assume that there would be no additional returns achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy except to the extent that the actuary has reason to believe, based on relevant supporting data, that such additional returns will be consistently and reliably earned over the long term.

05 The expected investment expenses would depend on the investment policy of the social security program and the types of investments held and projected to be held in the future.

.06 The assumed expected rate of investment income need not be a flat rate but may vary from period to period.

## 7340 Non-economic Assumptions

.01 When setting non-economic assumptions, the actuary would reflect all material contingencies.

.02 The needed non-economic assumptions may include

- the benefit take-up rates;
- the expected fertility rate;
- the expected migration rate; and
- the expected mortality and morbidity rates.

## 7350 Margins for Adverse Deviations

.01 The actuary should not include any margins for adverse deviations when the circumstances affecting the work require a best estimate calculation. [Effective February 1, 2018]

.02 The actuary should include one or more margins for adverse deviations when the circumstances affecting the work require such margins. A non-zero margin should be sufficient, without being excessive. The overall provision for adverse deviations resulting from the application of all margins for adverse deviations should be appropriate in the aggregate. [Effective February 1, 2018]

.03 If the actuary is required by the circumstances affecting the work to use a margin for adverse deviations that is outside the range that the actuary considers appropriate, the actuary may use such imposed assumption, but the actuary should disclose that the margin is outside of the appropriate range and disclose the reason for using such margin. [Effective February 1, 2018]

.04 Examples of situations where the circumstances affecting the work might require an unbiased calculation include

- the legislation governing the social security program requires an unbiased calculation; or
- the social security program's financing policy requires the use of best estimate assumptions.

.05 Examples of situations where the circumstances affecting the work might require the inclusion of one or more margins for adverse deviations include

- the relevant legislation or financing policy requires inclusion of margins for adverse deviations; or
- the level of uncertainty or volatility around a particular assumption is high, and not considered to be sufficiently mitigated by the underlying adaptability of the social security program.

.06 Where the actuary includes a margin for adverse deviations, the actuary would provide the rationale for inclusion of the margin and for the selection of the specific amount of the margin. The rationale may include considerations such as

- the financing policy of the social security program;
- the relative importance placed on the balancing of competing interests (e.g., benefit security versus cost of the social security program);
- the level of uncertainty inherent in the assumption;
- the level of reliability or credibility of the data or historical information upon which the assumption is based;
- the asset/liability mismatch risk; and
- the legislative or other restrictions on the ability to mitigate past adverse experience.

## 7360 Sensitivity Testing

.01 The actuary should perform sensitivity testing of adverse scenarios to illustrate plausible material risks to which the social security program may be exposed and to aid in the understanding of the effect of adverse changes to assumptions. [Effective October 15, 2017]

.02 The actuary may also perform sensitivity testing of favourable scenarios.

.03 When selecting the assumptions and scenarios for sensitivity testing, the actuary would consider the circumstances affecting the work, and would select those assumptions that have a material impact on the valuation. The actuary may consider the use of testing of integrated sensitivity scenarios, for example, the effect of a deep and prolonged recession.

.04 Assumptions tested may include, but are not limited to, the following:

- investment rate;
- real wage growth;
- labour force participation rates; and
- mortality rates.

# 7400 Experience Analysis

.01 The actuary should conduct an experience analysis, including a comparison of actual and expected experience for the period between the prior calculation date and the current calculation date. [Effective October 15, 2017]

.02 The actuary should conduct a reconciliation of the main results of the social security program valuation between the prior calculation date and current calculation date. The reconciliation should include an analysis and itemization of the changes in the methodology and assumptions used, legislative amendments that occurred, or other components of the valuation that contributed to the change in the main results. [Effective October 15, 2017]

.03 The actuary's analysis would include all significant experience variations. At a minimum, the actuary's analysis would consider the impact of any significant changes to the assumptions or methods used, any significant changes to the benefits or policies of the social security program, gains or losses due to investment returns on the social security program's assets, legislative changes, and any other areas where the difference between actual and expected experience is significant.

# 7500 Reporting on the Valuation of a Social Security Program

.01 For work pursuant to this part, the actuary should prepare a report that:

- states the calculation date and the report date of the actuarial opinion given;
- identifies the legislation or other authority under which the work is completed;
- describes the significant terms of the appropriate engagement that are material to the actuary's work, including the purpose of the work;
- describes the sources of the participants data, program provisions and policies, and assets, if any, and the dates at which they were compiled;
- describes the data used for the valuation and any limitations thereof, and any significant assumptions made about insufficient or unreliable data;
- describes the social security program's provisions, significant policies, and relevant administration practices, including the identification of any amendments made since the prior calculation date, and the effect of such amendments on the program's financial condition;
- describes the social security program's source(s) of financing;
- describes any automatic balancing mechanisms of the social security program;
- describes any definitive or virtually definitive amendment, policy change or change to administration practice, confirms whether or not such amendment or change has been reflected in the valuation, and identifies the effect of such amendment or change on the program's financial condition;
- discloses any subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, or, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- describes the nature and extent of material risks faced by the social security program, and the approach taken by the actuary to assess those risks;
- states that the assumptions are best estimates, where that is the case, or discloses the aggregate provision for adverse deviations in the results, where the assumptions include margins for adverse deviations;

- describes the methodology used to assess the financial condition of the social security program at the calculation date. The description of the methodology should specify:
  - whether it is based on a closed or open participants group, and
  - how any automatic balancing mechanisms, if present, are incorporated;
- presents the projections of the components of the program's cash flows, including the contributions, benefits, administrative expenses, and investment income, if any;
- presents the key results of the valuation with and without any assumed ad hoc adjustments;
- states the key contribution rates required for the social security program, if applicable;
- describes and quantifies a reconciliation of the actual and expected experience with respect to the assets, if applicable, expenditures, and key contribution rates or other indicators of the social security program from the prior calculation date to the current calculation date; and
- describes sensitivity or scenario testing performed for key assumptions and reports the results of such testing.

Depending on the terms of the engagement, the report should:

- state the prior calculation date and next calculation date, as applicable;
- describe the social security program's assets, if any, including their market value, the assumptions and methods used to value the assets, and a summary of the assets by major category;
- state the financial condition of the social security program; and
- if the social security program is meant to be fully funded, state:
  - its funded status at the calculation date under a closed group methodology;
  - if also using an open group methodology, the extent to which the social security program's current assets and the present value of its future contributions cover the present values of its current and anticipated future liabilities over the projection period under an open group methodology;

  and describe the differences between the above two measures. [Effective February 1, 2018]

.02 The report should provide the following five statements of actuarial opinion, all in the same section of the report and in the following order:

- A statement regarding the data, which would usually be, "In my opinion, the data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding the assumptions, which would usually be, "In my opinion, the assumptions used for the purpose of the valuation are reasonable and appropriate, both individually and in aggregate.";
- A statement regarding the methods, which would usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose of the valuation.";
- If applicable to the mandate, a statement certifying the required key contribution rates or other measures to finance the social security program. The statement may take the form of:

  "Based on the results of this valuation, I hereby certify that the [name(s) of key contribution rate(s) and/or other measure(s)] to finance the [name of social security program] is [X.XX]% for the year [YYYY] and thereafter";
- A statement regarding conformity to accepted actuarial practice, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective October 15, 2017]

.03 The report should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation and to enable stakeholders, policymakers, and other interested parties to make informed decisions regarding the social security program. [Effective October 15, 2017]

.04 There are several measures the actuary may use to present the results, including

- projected cash flows and ending positions,
- discounted cash flows, and/or
- contribution rates required.

.05 The actuary may be asked to answer questions regarding the financial condition of the social security program, such as the estimated effect from changing an assumption used in the most recent valuation. In such instances, the actuary would specify the purpose and scope of the work and any limitations or constraints that apply to the interpretation of the results of the work compared to the results of the most recent valuation. If an actuarial opinion is required for such work, the actuarial opinion would be similarly adjusted.

.06 The circumstances affecting the work may result in a deviation from accepted actuarial practice in Canada. For example, the applicable legislation or the terms of engagement may require that the actuary use a margin for adverse deviations that is outside the range that the actuary considers appropriate. In such case, the actuary would disclose such deviation in the report, and if practical, useful, and appropriate under the terms of the engagement, report the results of applying accepted actuarial practice.

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# Revised Draft Educational Note

# Assessing Eligibility for the Premium Allocation Approach Under IFRS 17 for Property & Casualty and Life & Health Insurance Contracts

**Committee on Property and Casualty Insurance Financial Reporting**
**and**
**Committee on Life Insurance Financial Reporting**

**December 2020**

Document 220103

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*The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.*

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# MEMORANDUM

**To:** Members in the Property and Casualty and Life and Health Insurance Practice Areas

**From:** Steven W. Easson, Chair
Actuarial Guidance Council

Sarah Chevalier, Chair
Committee on Property and Casualty Insurance Financial Reporting

Marie-Andrée Boucher, Chair
Committee on Life Insurance Financial Reporting

**Date:** December 7, 2020

**Subject:** **Revised Draft Educational Note – Assessing Eligibility for the Premium Allocation Approach Under IFRS 17 for Property & Casualty and Life & Health Insurance Contracts**

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The Committee on Property and Casualty Insurance Financial Reporting (PCFRC) and the Committee on Life Insurance Financial Reporting (CLIFR) have prepared this draft educational note to provide guidance on assessing the eligibility of insurance contract groups for the application of the simplified premium allocation approach (PAA) within the scope of the International Financial Reporting Standard 17 – *Insurance Contracts* (IFRS 17).

This draft educational note is relevant to the IFRS 17 valuation of all insurance contract groups, including Property & Casualty (P&C) and Life & Health (L&H), which are potentially eligible for the PAA.

The draft educational note is structured into eight sections, plus three appendices. Section 1 introduces the option of measuring the liability for remaining coverage (LRC) using the PAA rather than the general measurement approach (GMA). Section 2 provides an overview of the three key criteria for eligibility of the PAA, which are discussed in detail in the next three sections:

- Section 3: Determining whether the contracts in a group each have a coverage period of 12 months or less.
- Section 4: Performing the assessment of "would not differ materially" for the LRC determined using the GMA and the PAA.
- Section 5: Understanding the meaning of "significant variability in the fulfilment cash flows."

The remaining sections address additional considerations relating to onerous contracts, reinsurance, and subsequent assessments of similar contracts in new groups. The appendices provide illustrative examples supporting the concepts discussed in Sections 4 and 5.

A preliminary version of the draft educational note was shared with the following committees in the second quarter of 2020:

- Committee on Risk Management and Capital Requirements (CRMCR);
- Committee on the Appointed/Valuation Actuary (AA);
- International Insurance Accounting Committee (IIAC);
- Worker's Compensation Committee.

A preliminary version of the draft educational note was also shared with the staff of the Accounting Standards Board (AcSB) to broaden consultations with the accounting community. Given that this draft educational note provides actuarial guidance rather than accounting guidance, the AcSB staff review was limited to citations of and any inconsistencies with IFRS 17. CIA educational notes do not go through the AcSB's due process and therefore, are not endorsed by the AcSB.

The draft educational note was also was presented several times at the AGC in the months preceding this request for approval.

The PCFRC and CLIFR feel that they have addressed the material comments received by the various committees.

This draft educational note is written primarily from the perspective of Canadian actuaries and is not intended to duplicate any other guidance. Additional information that provides further detail can be found in the International Actuarial Association guidance and other Canadian Institute of Actuaries (CIA) documents. The draft educational note *Compliance with IFRS 17 Applicable Guidance* provides guidance to actuaries when assessing compliance with IFRS 17. It is applicable to all draft educational notes pertaining to IFRS 17 and members are encouraged to review it prior to reading any draft educational note related to IFRS 17.

The creation of this cover letter and draft educational note has followed the AGC's protocol for the adoption of educational notes. In accordance with the CIA's *Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice and Research Documents*, this draft educational note has been prepared jointly by the PCFRC and CLIFR and has received final approval for distribution by the AGC on July 14, 2020.

The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the

Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.

If you have any questions or comments regarding this draft educational note, please contact Sarah Chevalier at sarahchevalier@axxima.ca or Marie-Andrée Boucher at mboucher@eckler.ca.

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## 1. Introduction[1]

IFRS 17 establishes principles for the recognition, measurement, presentation, and disclosure of insurance contracts. The purpose of this draft educational note is to provide actuaries with practical application guidance on assessing whether a group of insurance contracts meets the required eligibility criteria for use of the premium allocation approach (PAA) to measure the liability for remaining coverage (LRC) under IFRS 17 *Insurance Contracts* (IFRS 17). This draft educational note is relevant to the valuation of all insurance contract groups, including property & casualty (P&C) and life & health (L&H) groups potentially eligible for measurement under the PAA.

References to specific paragraphs of IFRS 17 are denoted by IFRS 17.XX, where XX represents the relevant paragraph number, except that direct quotes from the IFRS 17 standard are as shown in the standard (i.e., paragraph XX).

Under IFRS 17, the general measurement approach (GMA) is the default approach applicable to LRC, as described in IFRS 17.32:

> 32 On initial recognition, an entity shall measure a group of insurance contracts at the total of:
>
> (a) the fulfilment cash flows, which comprise:
>
> (i) estimates of future cash flows (paragraphs 33-35);
>
> (ii) an adjustment to reflect the time value of money and the *financial risks* related to the future cash flows, to the extent that the financial risks are not included in the estimates of the future cash flows (paragraph 36); and
>
> (iii) a *risk adjustment for non-financial risk* (paragraph 37).
>
> (b) the contractual service margin, measured applying paragraphs 38-39.

The PAA is a simpler and less costly approach to apply than the GMA, as there is no need to estimate fulfilment cash flows under the PAA, nor is it necessary to identify and amortize a contractual service margin (CSM). Instead, the LRC is measured as described in paragraph 55:

> 55 Using the premium allocation approach, an entity shall measure the liability for remaining coverage as follows:
>
> (a) on initial recognition, the carrying amount of the liability is:
>
> (i) the premiums, if any, received at initial recognition;
>
> (ii) minus any insurance acquisition cash flows at that date, unless the entity chooses to recognize the payments as an expense applying paragraph 59(a); and
>
> (iii) plus or minus any amount arising from the derecognition at that date of:

[1] Acknowledgement: In developing this draft educational note, the Committees referred to limited sections of a position paper developed by the Insurance Bureau of Canada (IBC), in consultation with their member companies, audit firms and regulatory authorities. We wish to thank the IBC for making this work available to us.

1. any asset for insurance acquisition cash flows applying paragraph 28C; and
2. any other asset or liability previously recognized for cash flows related to the group of contracts as specified in paragraph B66A.

The valuation of the Liability for Incurred Claims (LIC) for groups eligible for the PAA is also subject to a minor simplification in respect of discounting, as indicated in IFRS 17.59(b). The LIC simplification is not addressed in this draft educational note, as it is out of scope for assessing PAA eligibility.

## 2. Decision Points

In determining PAA eligibility for insurance and reinsurance contracts, refer to IFRS 17.53–54 (emphasis added):

53 **An entity may simplify the measurement of a group of insurance contracts using** the premium allocation approach set out in paragraphs 55–59 if, and only if, at the inception of the group:

(a) the entity reasonably expects that such simplification would produce a measurement of the liability for remaining coverage for the group that would **not differ materially** from the one that would be produced applying the requirements in paragraphs 32–52; or

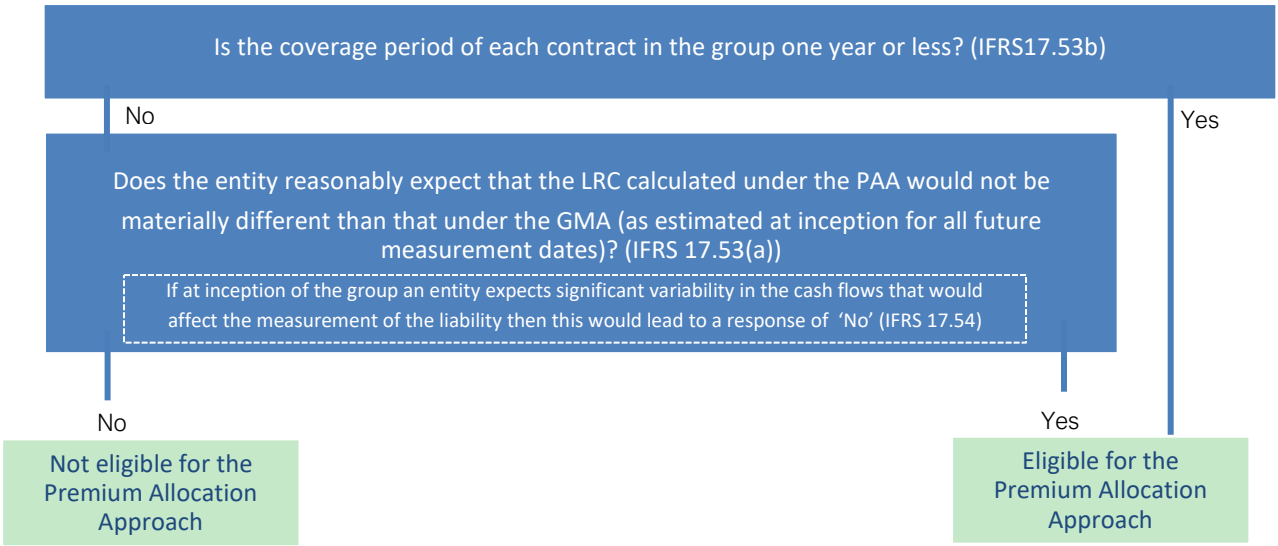
(b) the coverage period of each contract in the group (including insurance contract services arising from all premiums within the contract boundary determined at that date applying paragraph 34) is one year or less.

54 The criterion in paragraph 53(a) is not met if at the inception of the group an entity **expects significant variability in the fulfilment cash flows** that would affect the measurement of the liability for remaining coverage during the period before a claim is incurred. Variability in the fulfilment cash flows increases with, for example:

(a) the extent of future cash flows relating to any derivatives embedded in the contracts; and

(b) the length of the coverage period of the group of contracts.

The following decision tree illustrates the various decision points in determining PAA eligibility. Eligibility is assessed as at the inception date of the group of contracts.




Section 6 addresses PAA eligibility for groups of onerous contracts.

For non-onerous groups, the actuary considers the first decision point related to the coverage period of the contracts. If the coverage period for all contracts in the group is one year or less, the group is automatically eligible for the PAA based on IFRS 17.53(b).

For groups that include contracts that have a coverage period exceeding 12 months, the PAA eligibility assessment is performed at inception of the group of contracts; it is contingent upon the expectation that the PAA estimate of the LRC would not differ materially from the GMA calculation of the LRC at all reporting dates within the coverage period of the group as per IFRS 17.53(a). This expectation would be based on an assessment of both (1) the expected future values of the GMA LRC, and (2) reasonably likely fluctuations in future values of the GMA LRC that consider expected variability in fulfilment cash flows (FCF) as per IFRS 17.54.

An expectation of significant variability in the FCF would not by itself make a group ineligible for the PAA, but would disqualify the group from PAA eligibility if such variability is expected to create a material difference between the PAA and GMA estimates of the LRC.

With respect to the analysis of whether the entity expects significant variability in the FCF, the need for systematic quantitative testing of significant variability increases with the length of the coverage period of the group of contracts.

Key issues for the actuary in determining eligibility for using the PAA are:

- determining whether the contracts in a group each has a coverage period of 12 months or less (Section 3);
- performing the assessment of "would not differ materially" (Section 4); and
- understanding the meaning of "expects significant variability in the fulfilment cash flows" (Section 5).

From a practical perspective, it may be efficient to analyze PAA eligibility for groups with coverage exceeding 12 months using the last two steps noted above, which are detailed in Sections 4 and 5. If the GMA and PAA estimates of the LRC differ based upon expected future estimates of the FCF, the group would not be eligible for the PAA, and there would be no need to assess the impact of variability in the FCF.

## 3. Coverage Period Considerations

Contracts with a coverage period of one year or less are automatically eligible for the PAA, according to IFRS 17.53(b). The coverage period is assessed based on the criteria outlined in IFRS 17.34 (as shown below), based on the facts and circumstances of the contracts in the group:

> 34 Cash flows are within the boundary of an insurance contract if they arise from substantive rights and obligations that exist during the reporting period in which the entity can compel the policyholder to pay the premiums or in which the entity has a substantive obligation to provide the policyholder with insurance contract services (see paragraphs B61–B71). A substantive obligation to provide insurance contract services ends when:
>
> (a) the entity has the practical ability to reassess the risks of the particular policyholder and, as a result, can set a price or level of benefits that fully reflects those risks; or
>
> (b) both of the following criteria are satisfied:
>
> (i) the entity has the practical ability to reassess the risks of the portfolio of insurance contracts that contains the contract and, as a result, can set a price or level of benefits that fully reflects the risk of that portfolio; and
>
> (ii) the pricing of the premiums up to the date when the risks are reassessed does not take into account the risks that relate to periods after the reassessment date.

Often the contract boundary is obvious based on the facts and circumstances of the contracts. Many P&C and Group L&H contracts are renewable annually, and therefore these types of contracts might be a natural choice for application of the PAA. Creditor insurance, travel insurance, and other individual L&H contracts with short contract boundaries may also be potential candidates for the PAA approach. As noted in IFRS 17.34, if the entity can reprice the risks of all contracts in the group within one year, without restrictions, the contract boundary is generally one year or less, which would make the contract automatically eligible for the PAA under IFRS 17.53(b) because the contract boundary would denote the end of the coverage period for the LRC.

However, the following is a partial list of additional factors that could influence the contract boundary and the length of the coverage period:

- If there are restrictions on the entity's ability to reprice that extend beyond a year (e.g., rate guarantees of longer than a year, or caps on the amount of rate action that the entity

can take), then the coverage period would likely extend beyond one year. In these circumstances, the onus would be on the entity to demonstrate that a PAA estimate of the LRC is not significantly different than a GMA estimate of the LRC. See Sections 4 and 5 below.

- Some contracts may allow both parties to unilaterally terminate the contract within 12 months, yet still have some of the repricing restrictions described in the previous bullet. In this situation, the coverage period could be less than one year if the termination provision has commercial substance (see IFRS 17.2) – this means the entity has the practical ability to terminate the contract after considering all the substantive rights and obligations of the contract.
- Some contracts, such as Group L&H contracts, typically have multiple coverages with different contract boundaries. The contract boundary under IFRS 17.34 would be determined by the coverage with the longest boundary, unless the contracts have a termination provision that shortens the contract boundary to less than 12 months as per the previous bullet. This may affect the automatic eligibility criteria for the group of contracts (coverage period 12 months or less) and/or the assessments of "would not differ materially" or "significant variability" discussed in Sections 4 and 5 respectively.
- The coverage period would include all insurance coverage, plus any investment-return or investment-related services, per the amended definition of insurance contract services in IFRS 17 Appendix A. Such investment services would generally not be part of most contracts with short coverage periods, but could exist in contracts that include, for example, amounts on deposit or experience rating refund obligations.
- Some short-term contracts may provide consequential insurance coverage (i.e., coverage consequent to a claim being incurred) that might extend the coverage period. For example, P&C automobile coverage and Group L&H Long Term Disability (LTD) contracts both provide disability coverage for claims incurred within a short contract boundary. The resulting disability payments can extend many months or years beyond the period in which a claim can be incurred. If these disability payments are considered settlement of a claim (i.e., LIC) or insurance coverage under a separate annuity contract[2], the coverage period would not be extended. However, if the disability payments indicate continuation of insurance coverage (i.e., LRC under the original contract), the coverage period would be extended until all claims have been exhausted.

[2] It can be argued that LRC treatment for Group LTD creates consequential insurance coverage under the original contract, which would extend the coverage period. However, it can also be argued that disabled life annuity coverage is implicitly provided under a separate contract between the entity and the disabled individual, because the parties to the obligations are different (entity and group sponsor for the initial contract, versus entity and the disabled individual for the second contract) and because the entity's obligations under the second contract persist beyond the termination of the first contract. The debate is outside the scope of this paper.

# 4. Assessing "would not differ materially"

## 4.1 Background

The PAA is a relatively simple method of determining the LRC, devised to approximate the results of the GMA. The intended applicability of the PAA is for insurance contracts with short coverage periods, as discussed in the previous section. If a group of contracts does not meet the 12-month coverage period criterion, the entity may still be eligible to use the PAA for the group if the entity can demonstrate, at the inception of the group, that the PAA would produce an estimate of the LRC that "would not differ materially" from the measurement of the LRC under the GMA. This criterion would apply for the LRC at the inception of the group and the expected LRC at each future accounting period within the coverage period.

IFRS 17.54 states that the assessment of PAA eligibility would include an assessment of whether the entity "expects significant variability" in the fulfilment cash flows that would affect the measurement of the LRC. Variability of fulfilment cash flows in this context is discussed in Section 5, but it is important to note that the entity may assess variability as an integral part of the assessment of "would not differ materially."

## 4.2 Determination of Thresholds

Materiality is an entity-specific aspect of relevance that is based on the nature and/or magnitude of the items to which the information relates in the context of an individual entity's financial report (see International Accounting Standards (IAS) 1 and IAS 8 for details). In the context of assessing PAA eligibility, appropriate (materiality) thresholds may differ for groups based on their relative size. The actuary would consult with the entity's management regarding the thresholds used for assessing PAA eligibility.

The actuary would use judgment in determining whether measurement differences between the two approaches differ materially:

- Quantitative assessment: The actuary would use judgment to determine an appropriate internal policy that includes thresholds (such as a percentage and dollar threshold) for performing this assessment. For example, the actuary may first compare the LRC under the two measurement approaches for each reporting period and assess the dollar amounts of the differences in measurement relating to these groups of contracts. Based on this assessment, the actuary may conclude that the PAA estimate does not differ materially from the GMA estimate, including consideration of variability of cash flows discussed in Section 5 of this draft educational note. Alternatively, if there are differences above this threshold, then the actuary may conclude that the GMA would be used.
- Qualitative assessment: In some cases, the actuary may be able to make a qualitative assessment for certain groups of contracts if the outcome of the "differ materially" assessment is obvious or in situations in which a qualitative assessment is considered sufficient:
    - Groups of contracts in which the total measurement is substantially lower than the tolerable dollar threshold amount.

- Groups of contracts that are very similar to groups for which a more formal assessment has been done.
- Groups of contracts renewing with characteristics consistent with those when an initial assessment was performed.

In cases such as these, there may be no need for a quantitative assessment.

Both quantitative and qualitative assessments are performed at a group of contracts level. Reasonable and supportable information is required to initially determine portfolios and profitability groups, which are then used in the PAA eligibility assessment. How contracts are grouped, including contracts with different coverage periods, may also influence the results of the PAA eligibility assessment.

Judgment is required to determine an appropriate internal policy on assessment of PAA eligibility, including establishment of thresholds. When such judgment is significant, it would be disclosed in accordance with IAS 1 paragraph 122, which requires disclosure of judgments that management has made in applying accounting policies that have the most significant effect on the amounts recognized in the financial statements. In addition, IFRS 17.97(a) requires disclosure of which criteria in IFRS 17.53 the entity has met for contracts to be eligible for the PAA.

The illustrative case study in Appendix A presents a possible interpretation of applying materiality considerations.

### 4.3 Assessment of Differences in the LRC

The guidance in IFRS 17.53(a) states that the comparison between the two measurement approaches considers only the "measurement of the [LRC] for the group." Therefore, eligibility for the PAA is based on a comparison at inception of the expected balance at each future reporting date within the coverage period of the LRC for a group of contracts under the PAA versus the corresponding expected balance of the LRC under the GMA. Although the test is conducted only at inception, the assessment is whether the PAA would produce a reasonable approximation to the GMA over the duration of the coverage period (i.e., at each future reporting date within the coverage period).

As the requirements of IFRS 17.32-52 apply, the FCF in the GMA are based on probability-weighted estimates of future cash flows, adjusted to reflect the effect of discounting and risk adjustment for non-financial risk (risk adjustment).

The actuary would test the PAA eligibility for the group in its entirety (as opposed to a single contract issued on the inception date of the group) and would consider all the contracts that are expected to be included in the group. Since the PAA eligibility test is performed at inception, the contracts to be issued and included in the group are not known at the time the test is performed. Nonetheless, the projected FCF would consider the expected timing of issuance of the contracts. The actuary may consider historical patterns of issued premium volume, if available. A common assumption is that contracts are written uniformly throughout the year with no significant seasonality in the issuance of policies. If such an assumption is appropriate, the projected FCF would consider that 25% of contracts are written each quarter

in a group which spans contracts issued over a one-year period. The timing of claim and expense assumptions would be consistent with the timing of premiums issued.

Under the PAA, the estimate of the LRC at any point in time is a relatively simple calculation: the PAA LRC would generally be the premium received less expenses and amortizations for services rendered[3]. Per IFRS 17.B126, amortization of the LRC would be based on the passage of time, or based on the timing of incurred insurance service expenses if significantly different than passage of time.

Under the GMA, the estimate of the LRC would involve calculation of the FCF and the CSM. Despite the greater complexity in the GMA calculation, the basic premise of the LRC (to make provision for unexpired coverage) is the same under both approaches, and thus the LRC under both approaches would tend to be similar, especially for short coverage periods.

A simple illustration of the comparison of LRC under the PAA and GMA is provided in Appendix B (ignoring variability in the FCF, which is addressed in Section 5 and Appendix C). For illustrative purposes, each of the groups shown is assumed to be comprised of a single insurance contract. Two sets of examples are shown. In the first set of examples (B1), quarterly premiums are received and the associated claims are incurred and paid uniformly in the same quarter throughout the coverage period. In these examples, the GMA and PAA estimates of the LRC are identical regardless of the discount rate.

In the second set of examples (B2), the claims are incurred and paid quarterly, as above, but premiums are received annually. When the time value of money is assumed to be zero, the resulting GMA and PAA estimates of the LRC remain identical. However, a non-zero time value of money creates a difference in the LRC estimate versus the PAA estimate (which does not consider the time value of money). Such a difference is unlikely to be significant if the timing between premiums and associated claims is relatively short.

The simple examples ignore the risk adjustment, which is unlikely to introduce significant differences between the PAA and GMA estimates of the LRC, as the release of the risk adjustment would generally follow a pattern reasonably similar to amortization of the PAA LRC.

If the FCF has a significant non-linear pattern, that pattern would be reflected in both the GMA LRC (via the FCF) and the PAA LRC (via the B126 requirement noted above). However, the amortization of CSM may not follow the same non-linear pattern, thereby giving rise to differences between the PAA and GMA estimates of the LRC.

Notwithstanding the conclusion illustrated in Appendices B and C that the PAA and GMA estimates are likely to be reasonably similar for short coverage periods (prior to considering variability in the FCF), the assessment of "would not differ materially" would always be subject to the entity's own materiality thresholds. Differences between the PAA and GMA estimates generally increase with the length of the coverage period, and with variability in the FCF which is addressed in the next section.

[3] Unless a financing adjustment is made. Under the PAA, per IFRS 17.56, there is no obligation to adjust for the time value of money unless the claims associated with the premium are more than a year apart.

## 5. Significant Variability in the Fulfilment Cash Flows

Groups of contracts for which the coverage period of each contract is one year or less are eligible for the PAA based on IFRS 17.53(b) and accordingly no assessment of variability of the FCF is required.

For groups with longer coverage periods, the PAA estimate of the LRC may be materially similar to the GMA LRC calculated using probability-weighted cash flows in the FCF, but this alone is not sufficient to meet the requirement in IFRS 17.53(a). Specifically, IFRS 17.54 requires an entity to consider significant variability in the FCF at the level of groups of contracts. As noted in Section 4.1, the entity may assess variability and its expected effect on the measurement of the FCF as an integral part of the assessment of "would not differ materially" described in Section 4.

There is no explanation of "significant variability in fulfilment cash flows" in IFRS 17 itself, IFRS 17 *Basis for Conclusions* or IFRS 17 *Effects Analysis*. Variability is significant if it is reasonably expected to result in significant differences in the measurement of the LRC between the PAA and GMA at any point during the coverage period.

The FCF include a probability-weighted estimate of future cash flows and the effect of discounting, as well as risk adjustment. Any assumptions about these three components may influence the variability of the FCF and therefore the variability of the GMA estimates, but not necessarily that of the PAA estimates.

Judgment based on the facts and circumstances of the group would determine whether qualitative or quantitative testing would be required. Systematic quantitative testing of variability is not required unless such variability is expected to be significant in the context of estimating the FCF over the coverage period. IFRS 17.54 refers to examples of elements which are expected to contribute to variability in the FCF:

- IFRS 17.54(a) refers to embedded derivatives, and
- IFRS 17.54(b) refers to the length of coverage period.

Embedded derivatives are not typically found in Canadian P&C products or in Group L&H products and are not discussed in this draft educational note.

Differences in estimates between the two measurement methods typically increase with increases in the length of the coverage period. A number of factors may cause differences between the LRC under the PAA and/or the GMA over the coverage period, and might include the following considerations:

- Variability in the probability-weighted future cash flows during the unexpired risk period, illustrated in Appendix C, Example C1, which could increase with the length of the coverage period, including (but not limited to):
    - Experience over the expired portion of the coverage period may drive changes in assumptions related to the remaining coverage (e.g., a major court decision that affects the application of minor injury guidelines related to auto insurance); and

  - Changes in the environment (e.g., legal, social, economic) or interpretation of policy language (resulting from a jury decision or court interpretation) that may drive more or fewer claims over the remaining coverage period.

- Exposure to material variability in discount rates or yield curves over the remaining coverage period. See Appendix C, Examples C2 and C3.
- Any resulting effect of the above changes in assumptions on the risk adjustment, if warranted.

To satisfy the IFRS 17.54 criteria, judgment and/or testing would be required to determine whether variability resulting from the above considerations could result in variances (between the PAA and GMA estimates of the LRC) that exceed the entity's materiality thresholds. Only variability that is expected to occur at subsequent measurement dates in the remainder of the coverage period would be considered.

The premise of the IFRS 17.54 requirement is that variability in the cash flows may affect the GMA LRC, but would not affect the PAA LRC, therefore potentially leading to a material difference between the two estimates. It is important to note, however, that potential changes in the FCF may be mitigated to a great extent by offsetting changes in the CSM, negating much of the difference in the GMA LRC relative to the PAA LRC. This is illustrated in Appendix C, Example C1.

Conversely, changes in discount rates affecting the FCF would *not* adjust the CSM (per IFRS 17.B97(a)); this is illustrated in Appendix C, Examples C2 and C3. Changes in discount rates could create a potentially significant difference between the GMA and PAA estimates of the LRC for coverages that have a long claim settlement period (such as disability benefits under Group LTD or P&C auto contracts) as illustrated in Example C3, where estimates of FCF are sensitive to the effect of discounting.

The degree of judgment in determining how much testing, if any, would be required to assess the requirement in IFRS 17.54 would depend on facts and circumstances specific to the group of contracts being measured and the entity issuing the group of contracts. Considerations could include:

- *Length of the coverage period*: The shorter the coverage period, the less likely that significant changes in assumptions would occur in a period which could trigger a difference between the GMA LRC and the PAA LRC. For example, in Example C1, the actuary might qualitatively conclude that significant assumption changes are unlikely in the midst of a two-year contract based on stability of past experience, and any moderate assumption changes are unlikely to create a significant difference between the GMA LRC and the PAA LRC. However, for contracts with much longer coverage periods, or long claim settlement periods, the actuary may not be able to come to a similar conclusion without additional quantitative stress testing of the impacts of potential assumption changes.
- *The entity's materiality threshold(s)*: If simple stress tests, such as those in Appendix C, are considered plausible and the resulting difference in the LRCs exceed or come close

to the entity's materiality threshold, the actuary may need to do more quantitative testing to determine whether the group passes the requirement in IFRS 17.54.

For typical Canadian products, a qualitative assessment may be sufficient in the following circumstances. However, as noted in Section 4.2, judgment is required to determine an appropriate internal policy on assessment of PAA eligibility, including establishment of thresholds.

- For products with coverage periods marginally exceeding the one-year threshold (e.g., two-year automobile policies, or Group L&H contracts with rate guarantees marginally longer than one year), the PAA estimates of the LRC are expected to be very similar to the GMA estimates. For these types of products, it is unlikely, but not impossible, that variability in the cash flows would affect the group's eligibility for the PAA. See Appendix C, Example C1 for a numerical illustration, and Example C3 for potential caveats related to contracts with long claim settlement periods.
- Some types of variability (such as a change in expected premium volume) are expected to have a proportional effect on both the PAA and GMA estimates, and therefore need not be examined in detail. One example of this type of variability could be multi-year contracts where premiums reflect seasonal claims patterns.

Conversely, longer-term multi-year Canadian products (e.g., commercial construction policies, extended warranty products, title insurance and Group L&H contracts with multi-year rate guarantees or rate caps) may experience significant variability in the FCF due to the length of the coverage period. The LRC measured using the GMA can be affected by a larger range of eventual changes in assumptions used to estimate the FCF, whereas the LRC measured using the PAA may not be affected to the same extent as noted above. Quantitative assessment may be required for these products.

## 6. Onerous Contracts

If a group of onerous contracts is determined to be eligible for the PAA based on IFRS 17.53–54, the LRC based on the PAA is increased to reflect a loss component, as described in IFRS 17.57. Accordingly, the PAA estimate for an onerous group is, by definition, equal to the GMA estimate at inception.

Furthermore, if at any time during the coverage period, facts and circumstances indicate that a group of insurance contracts is onerous, the PAA LRC would be increased to reflect a loss component as described in IFRS 17.57–58.

Therefore, the eligibility test in IFRS 17.53(a) would always be passed for onerous contracts, as there could never be a material difference between the PAA and GMA estimates of the LRC.

## 7. Reinsurance

There is no difference between primary insurance and reinsurance contracts issued with regards to the PAA eligibility. For reinsurance contracts issued, the eligibility criteria of IFRS 17.53 apply. IFRS 17.69 and IFRS 17.70 pertain to reinsurance contracts held:

69 An entity may use the premium allocation approach set out in paragraphs 55–56 and 59 (adapted to reflect the features of reinsurance contracts held that differ from insurance contracts issued, for example the generation of expenses or reduction in expenses rather than revenue) to simplify the measurement of a group of reinsurance contracts held, if at the inception of the group:

(a) the entity reasonably expects the resulting measurement would not differ materially from the result of applying the requirements in paragraphs 63–68; or

(b) the coverage period of each contract in the group of reinsurance contracts held (including insurance coverage from all premiums within the contract boundary determined at that date applying paragraph 34) is one year or less.

70 An entity cannot meet the condition in paragraph 69(a) if, at the inception of the group, an entity expects significant variability in the fulfilment cash flows that would affect the measurement of the asset for remaining coverage during the period before a claim is incurred. Variability in the fulfilment cash flows increases with, for example:

(a) the extent of future cash flows relating to any derivatives embedded in the contracts; and

(b) the length of the coverage period of the group of reinsurance contracts held.

For reinsurance contracts held, the LRC includes the FCF related to the underlying contracts expected to be issued in the future to the extent that the ceding entity has substantive rights to receive services from the reinsurer related to the future underlying contracts.

If the coverage period exceeds one year, then the criteria of IFRS 17.69(a) and IFRS 17.70 for a group of reinsurance contracts held are used to assess PAA eligibility. The PAA eligibility for reinsurance contracts held is assessed separately from the PAA eligibility for the related underlying insurance contracts covered by reinsurance. The considerations described in Sections 2 to 5 for insurance contracts apply equally for reinsurance contracts.

Reinsurance contracts held that are written on a one-year risk-attaching basis could have a contract boundary of up to two years, assuming all underlying insurance contracts have a coverage period of one year and are written throughout the year. Therefore, such reinsurance contracts held do not meet the requirement of coverage period of one year or less for automatic eligibility for the PAA. Consequently, a group of reinsurance contracts held may not be automatically eligible for the PAA (and therefore subject to the GMA) while the underlying contracts are automatically eligible for the PAA.

## 8. Subsequent Assessments of Similar Contracts in New Groups

In theory, entities are expected to perform the PAA eligibility assessment for each new group of contracts at inception of the group. In practice, a quantitative test may not be required for each

subsequent group of contracts if the entity has already performed quantitative calculations for similar groups of contracts with substantially the same characteristics and measurement factors (e.g., discount rates and the amount and timing of claims). In such cases, the actuary may use judgment to make a qualitative assessment that the measurement factors have not changed since the previous quantitative assessment and that the prior judgment is still appropriate. Key assumptions, calculations and judgments underlying the assessment would be documented.

A new assessment for subsequent groups may be required if market conditions change significantly from the original assessment. For example, changes in interest rates, inflation, auto reforms, prescription drug reforms or the introduction of expensive new prescription drugs, or new types of claims could result in different conclusions in the assessment.

If the eligibility criteria are met for a group of contracts, the PAA is used for the duration of the contracts within the group. However, subsequent modifications to the terms of those contracts may result in the group no longer being eligible for the PAA. In this case, the original contracts are de-recognized and recognized as new contracts in accordance with IFRS 17.72.

## 9. Appendix A – Case Study (Illustrative)

This case study presents a possible interpretation of applying materiality considerations. It is for illustrative purposes only. In practice, an entity would define its own materiality level or threshold.

**Background**

- An entity has annual insurance revenue of $100 million.
- Contracts issued by the entity are either 12-month contracts, or 24-month contracts.
- The entity's contracts are assigned to four portfolios (A, B, C, and D).
- For contracts issued in year 1, those in Portfolio A are divided into two groups, one of which (A-2) consists of contracts that are onerous at initial recognition.
- There are no onerous contracts in Portfolios B, C or D.
- For each of the resulting five groups, an estimate of the LRC has been derived based on each of the PAA and GMA.

**Table 1**

| Portfolio & Group | Annual Revenue | Contract Coverage Period (mths) | PAA Estimate | GMA Estimate | Difference = PAA Less GMA |
|---|---|---|---|---|---|
| A-1 | 50,000 | 12 | 20,000 | | |
| A-2 | 14,000 | 12 | 5,600 | 6,300 | -700 |
| B | 1,000 | 12 and 24 | 400 | | |
| C | 15,000 | 24 | 6,000 | 5,625 | +375 |
| D | 20,000 | 24 | 8,000 | 7,000 | +1,000 |

(Amounts in $000's)

The differences shown above (PAA estimates less GMA estimates) are based on estimates as at the inception at each group.

- Corresponding differences at the end of years 1, 2 and 3 were determined to be less than the differences at inception, and therefore are not considered further in this illustrative example of PAA eligibility assessment.
- As discussed in the portfolio-by-portfolio commentary that follows, consideration was also given to the effect on the LRC of potential variability the entity would reasonably expect, as per IFRS 17.54.

**Thresholds**

The entity selected three thresholds for assessing PAA eligibility of each group:

- Threshold #1 – Coverage period of each contract in the group **≤12 months** as per IFRS 17.53(b).

- Threshold #2 – Annual insurance revenue for the group is **≤$1 million** (or 1% of the entity's aggregate annual premium), in which case the group is considered to be eligible for the PAA.
- Threshold # 3 – The dollar difference (absolute value) between the GMA and PAA estimates of the LRC for the group is ≤ the group's share of an aggregate threshold of **$5 million**. For illustrative purposes, the group's share (allocation) of the aggregate amount is calculated on the basis of annual revenue times the estimated expected loss ratio, as shown in Table 2:

**Table 2**

| Portfolio & Group | Annual Revenue [1] | Expected Loss Ratio [2] | Basis for Allocation [3]=[1]x[2] | Threshold #3 Allocated To Groups |
|---|---|---|---|---|
| A – 1 | 50,000 | 50% | 25,000 | 2,425 |
| A – 2 | 14,000 | 70% | 9,800 | 951 |
| B | 1,000 | 50% | 500 | 48 |
| C | 15,000 | 55% | 8,250 | 800 |
| D | 20,000 | 40% | 8,000 | 776 |
| Total | 100,000 | | 51,550 | **5,000** |

(Amounts in $000's)

Dollar differences between the GMA and PAA estimates of the LRC are used as the basis for applying Threshold #3. Dollar differences are calculated at inception and at each future reporting period in the coverage period, taking into consideration the expected pattern of insurance contracts issued which are expected to be included in the group.

Judgment is used in determining portfolios and groups of insurance contracts, and these may not be established by the actuary. Nonetheless, the actuary determines thresholds that apply at the group level and are consistent with the premium volume in the various groups in order to avoid systematically relying on Threshold #2 to meet eligibility requirements. Judgment would need to be applied to determine the appropriate level of Threshold #2 based on the granularity at which the groups are formed. For example, in the extreme case where groups would be determined at the contract level, applying Threshold #2 may not be appropriate, but Threshold #3 might be; hence Threshold #3 can act as a check and balance on Threshold #2.

**Assessment of Eligibility**

Applying the level of aggregation requirements of IFRS 17, five groups of contracts have been identified, pertaining to four portfolios, as described below. The results of the eligibility testing are summarized in Table 3.

- Portfolio A: Two groups with only 12-month policies and with a combined annual insurance revenue of $64 million.
    - Group 1: Not onerous
        - No policies longer than 12 months and so **eligible for the PAA.**
        - A GMA estimate is not required.

- Group 2: Onerous
  - No policies longer than 12 months and so **eligible for the PAA.**
  - A GMA estimate is required in order to determine the loss component required for an onerous group.

- Each of the remaining groups has a mix of 12-month and 24-month contracts. None of these groups have been identified as onerous.
  - Portfolio B: One group with annual insurance revenue of $1 million
    - The insurance revenue is within the **≤** $1 million threshold and so the PAA estimate is assumed to be a reasonable approximation of the GMA (i.e., any difference is considered insignificant).
    - This group is **eligible** for the PAA.
  - Portfolio C: One group with annual insurance revenue of $15 million
    - The insurance revenue is above the **≤** $1 million threshold and so the eligibility is based on the assessment of the GMA vs PAA.
    - The difference between the GMA and PAA measurement of the LRC is determined to be <u>less than</u> the group's share of the aggregate threshold of $5 million (i.e., $375,000 from Table 1 vs $800,000 from Table 2), thus meeting the criterion to "not differ materially". Furthermore, the actuary performed a qualitative assessment of significant variability in future FCF and concluded that no significant differences in projected claims, expense, discount rate and risk adjustment assumptions is expected to give rise to material differences between the GMA and PAA estimates over the coverage period.
    - This group is **eligible** for the PAA.
  - Portfolio D: One group with annual insurance revenue of $20 million
    - The insurance revenue is above the **≤** $1 million premium threshold and so the eligibility is based on the assessment of the GMA vs PAA.
    - The difference between the GMA and PAA measurement of the LRC is determined to be <u>greater than</u> the group's share of the aggregate threshold of $5 million ($1,000,000 from Table 1 vs $776,000 from Table 2), thus failing to meet the criterion to "not differ materially". Based on this result, the actuary did not perform further testing related to significant variability.
    - This group is **not eligible** for the PAA.

**Table 3**

| Portfolio & Group | Eligibility Per Threshold | | | Selected LRC | | | |
|---|---|---|---|---|---|---|---|
| | #1 | #2 | #3 | Based on PAA | Based on GMA | Selected LRC Excl. Loss Component | Loss Component |
| A-1 | Yes | | | 20,000 | | 20,000 | 0 |
| A-2 | Yes | | | 5,600 | | 5,600 | 700 |
| B | No | Yes | | 400 | | 400 | 0 |
| C | No | No | Yes | 6,000 | | 6,000 | 0 |
| D | No | No | No | | 7,000 | 7,000 | 0 |
| Total | | | | | | **39,000** | **700** |

(Amounts in $000's)

# 10. Appendix B – Measurement Differences due to Time Value of Money

***Illustration 1***

Consider a group consisting of a single insurance contract with a two-year coverage period. Premiums of $100 are payable at the beginning of each quarter. The expected loss ratio is 80%, with all claims associated with the quarterly premium assumed to be incurred in the middle of the quarter, and fully paid in that quarter. There is equal coverage in each quarter. To simplify the example, the risk adjustment is zero, and there are no expenses.

The PAA LRC would be calculated as follows:

**Table B1 - PAA Calculations**

| | premiums rec'd | revenue recognized | LRC |
|---|---|---|---|
| Time 0 | $0 | $0 | **$0** |
| End Q1/01 | $100 | $100 | **$0** |
| End Q2/01 | $100 | $100 | **$0** |
| End Q3/01 | $100 | $100 | **$0** |
| End Q4/01 | $100 | $100 | **$0** |
| End Q1/02 | $100 | $100 | **$0** |
| End Q2/02 | $100 | $100 | **$0** |
| End Q3/02 | $100 | $100 | **$0** |
| End Q4/02 | $100 | $100 | **$0** |

The following examples show how the above PAA LRC calculations would compare to GMA LRC calculations, with and without discounting in the GMA LRC.

- Example B1a illustrates the progression of the GMA LRC over the two-year coverage period, assuming the GMA discount rate is zero for simplicity, and further assuming that actual experience corresponds to expectations. The GMA LRC[4] is equivalent to the PAA LRC at initial assessment and each subsequent measurement point.

**Table B1a - GMA Calculations - zero discount rate**

| | Expected Cashflows | | | | | | | | | | GMA | PAA | Dollar |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1/01 | Q2/01 | Q3/01 | Q4/01 | Q1/02 | Q2/02 | Q3/02 | Q4/02 | FCF | CSM | LRC | LRC | Difference |
| Time 0 | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($160.00) | $160.00 | **$0.00** | **$0.00** | **$0.00** |
| | $80 | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q1/01 | | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($140.00) | $140.00 | **$0.00** | **$0.00** | **$0.00** |
| | | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q2/01 | | | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($120.00) | $120.00 | **$0.00** | **$0.00** | **$0.00** |
| | | | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q3/01 | | | | ($100) | ($100) | ($100) | ($100) | ($100) | ($100.00) | $100.00 | **$0.00** | **$0.00** | **$0.00** |
| | | | | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q4/01 | | | | | ($100) | ($100) | ($100) | ($100) | ($80.00) | $80.00 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | $80 | $80 | $80 | $80 | | | | | |
| End Q1/02 | | | | | | ($100) | ($100) | ($100) | ($60.00) | $60.00 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | | $80 | $80 | $80 | | | | | |
| End Q2/02 | | | | | | | ($100) | ($100) | ($40.00) | $40.00 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | | | $80 | $80 | | | | | |
| End Q3/02 | | | | | | | | ($100) | ($20.00) | $20.00 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | | | | $80 | | | | | |
| End Q4/02 | | | | | | | | | $0.00 | $0.00 | **$0.00** | **$0.00** | **$0.00** |

[4] The coverage units and CSM amortization factors used in these examples are shown at the end of Appendix C in Table C-4.

- Example B1b is exactly the same as example B1a, except the annual discount rate used in the GMA calculation of the LRC is 5%. Note that the GMA LRC remains equivalent to the PAA LRC at initial assessment and each subsequent measurement point in this example because the claims associated with the premium are incurred in the same reporting period.

| Table B1b - GMA Calculations - 5% discount rate | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Expected Cashflows | | | | | | | | | | GMA | PAA | Dollar |
| | Q1/01 | Q2/01 | Q3/01 | Q4/01 | Q1/02 | Q2/02 | Q3/02 | Q4/02 | FCF | CSM | LRC | LRC | Difference |
| Time 0 | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($157.10) | $157.10 | **$0.00** | **$0.00** | **$0.00** |
| | $80 | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q1/01 | | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($138.29) | $138.29 | **$0.00** | **$0.00** | **$0.00** |
| | | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q2/01 | | | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($119.25) | $119.25 | **$0.00** | **$0.00** | **$0.00** |
| | | | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q3/01 | | | | ($100) | ($100) | ($100) | ($100) | ($100) | ($99.98) | $99.98 | **$0.00** | **$0.00** | **$0.00** |
| | | | | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q4/01 | | | | | ($100) | ($100) | ($100) | ($100) | ($80.47) | $80.47 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | $80 | $80 | $80 | $80 | | | | | |
| End Q1/02 | | | | | | ($100) | ($100) | ($100) | ($60.72) | $60.72 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | | $80 | $80 | $80 | | | | | |
| End Q2/02 | | | | | | | ($100) | ($100) | ($40.72) | $40.72 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | | | $80 | $80 | | | | | |
| End Q3/02 | | | | | | | | ($100) | ($20.49) | $20.49 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | | | | $80 | | | | | |
| End Q4/02 | | | | | | | | | $0.00 | $0.00 | **$0.00** | **$0.00** | **$0.00** |

### *Illustration 2: Annual Premiums*

Consider the same insurance contract as in illustration 1, except premiums of $400 are payable at the beginning of each year rather than $100 payable quarterly.

The PAA LRC in this example would be calculated as follows:

| Table B2 - PAA Calculations | premiums rec'd | revenue recognized | LRC |
|---|---|---|---|
| Time 0 | $0 | $0 | **$0** |
| End Q1/01 | $400 | $100 | **$300** |
| End Q2/01 | $0 | $100 | **$200** |
| End Q3/01 | $0 | $100 | **$100** |
| End Q4/01 | $0 | $100 | **$0** |
| End Q1/02 | $400 | $100 | **$300** |
| End Q2/02 | $0 | $100 | **$200** |
| End Q3/02 | $0 | $100 | **$100** |
| End Q4/02 | $0 | $100 | **$0** |

Example B2a illustrates the progression of the GMA LRC over the two-year coverage period, assuming the GMA discount rate is zero for simplicity, and assuming that actual experience corresponds to expectations. The GMA LRC is equivalent to the PAA LRC at initial assessment and each subsequent measurement point.

| Table B2a - GMA Calculations - zero discount rate | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Expected Cashflows | | | | | | | | | | GMA | PAA | Dollar |
| | Q1/01 | Q2/01 | Q3/01 | Q4/01 | Q1/02 | Q2/02 | Q3/02 | Q4/02 | FCF | CSM | LRC | LRC | Difference |
| Time 0 | ($400) | $0 | $0 | $0 | ($400) | $0 | $0 | $0 | ($160.00) | $160.00 | **$0.00** | **$0.00** | **$0.00** |
| | $80 | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q1/01 | | $0 | $0 | $0 | ($400) | $0 | $0 | $0 | $160.00 | $140.00 | **$300.00** | **$300.00** | **$0.00** |
| | | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q2/01 | | | $0 | $0 | ($400) | $0 | $0 | $0 | $80.00 | $120.00 | **$200.00** | **$200.00** | **$0.00** |
| | | | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q3/01 | | | | $0 | ($400) | $0 | $0 | $0 | $0.00 | $100.00 | **$100.00** | **$100.00** | **$0.00** |
| | | | | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q4/01 | | | | | ($400) | $0 | $0 | $0 | ($80.00) | $80.00 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | $80 | $80 | $80 | $80 | | | | | |
| End Q1/02 | | | | | | $0 | $0 | $0 | $240.00 | $60.00 | **$300.00** | **$300.00** | **$0.00** |
| | | | | | | $80 | $80 | $80 | | | | | |
| End Q2/02 | | | | | | | $0 | $0 | $160.00 | $40.00 | **$200.00** | **$200.00** | **$0.00** |
| | | | | | | | $80 | $80 | | | | | |
| End Q3/02 | | | | | | | | $0 | $80.00 | $20.00 | **$100.00** | **$100.00** | **$0.00** |
| | | | | | | | | $80 | | | | | |
| End Q4/02 | | | | | | | | | $0.00 | $0.00 | **$0.00** | **$0.00** | **$0.00** |

Example B2b is exactly the same as example B2a, except the annual discount rate used in the GMA calculation of the LRC is 5%. Note that introduction of discounting in the GMA creates a difference in the estimate of the LRC relative to the PAA when premiums and associated claims are recognized in different reporting periods, as illustrated in the following table:

| Table B2b - GMA Calculations - 5% discount rate | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Expected Cashflows | | | | | | | | | | GMA | PAA | Dollar |
| | Q1/01 | Q2/01 | Q3/01 | Q4/01 | Q1/02 | Q2/02 | Q3/02 | Q4/02 | FCF | CSM | LRC | LRC | Difference |
| Time 0 | ($400) | $0 | $0 | $0 | ($400) | $0 | $0 | $0 | ($171.19) | $171.19 | **$0.00** | **$0.00** | **$0.00** |
| | $80 | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q1/01 | | $0 | $0 | $0 | ($400) | $0 | $0 | $0 | $151.13 | $150.69 | **$301.82** | **$300.00** | **$1.82** |
| | | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q2/01 | | | $0 | $0 | ($400) | $0 | $0 | $0 | $72.49 | $129.95 | **$202.44** | **$200.00** | **$2.44** |
| | | | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q3/01 | | | | $0 | ($400) | $0 | $0 | $0 | ($7.11) | $108.94 | **$101.84** | **$100.00** | **$1.84** |
| | | | | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q4/01 | | | | | ($400) | $0 | $0 | $0 | ($87.68) | $87.68 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | $80 | $80 | $80 | $80 | | | | | |
| End Q1/02 | | | | | | $0 | $0 | $0 | $235.66 | $66.16 | **$301.82** | **$300.00** | **$1.82** |
| | | | | | | $80 | $80 | $80 | | | | | |
| End Q2/02 | | | | | | | $0 | $0 | $158.06 | $44.38 | **$202.44** | **$200.00** | **$2.44** |
| | | | | | | | $80 | $80 | | | | | |
| End Q3/02 | | | | | | | | $0 | $79.51 | $22.32 | **$101.84** | **$100.00** | **$1.84** |
| | | | | | | | | $80 | | | | | |
| End Q4/02 | | | | | | | | | $0.00 | $0.00 | **$0.00** | **$0.00** | **$0.00** |

To satisfy the IFRS17.53(a) criteria, the entity would need to assess whether the expected differences between the GMA and PAA estimates of the LRC at future reporting dates are immaterial, based on the entity's materiality thresholds.

## 11. Appendix C – Variability in Fulfilment Cash Flows

Consider the same insurance contract as in Appendix B, Illustration 1: an insurance contract with a two-year coverage period. Premiums of $100 are payable at the beginning of each quarter. The expected loss ratio is 80%, with all claims associated with the quarterly premium assumed to be incurred in the middle of the quarter, and fully paid in that quarter. There is equal coverage in each quarter. To simplify the example, the risk adjustment is zero, and there are no expenses.

The PAA LRC would be calculated as in Table B1, with a zero LRC at the end of each quarter.

Example C1 extends example B1b to illustrate the impact of potential variability in the cash flows. All assumptions remain the same as example B1b, except the expected loss ratio increases from 80% to 90% at the beginning of year 2. The PAA LRC would not change, whereas the GMA LRC would, creating a differential between the two estimates. The change in FCF is partially offset by a change in CSM.

| Table C1 - GMA Calculations - 5% discount rate - shock to expected loss ratio in Q1/02 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Expected Cashflows | | | | | | | | | | GMA | PAA | Dollar |
| | Q1/01 | Q2/01 | Q3/01 | Q4/01 | Q1/02 | Q2/02 | Q3/02 | Q4/02 | FCF | CSM | LRC | LRC | Difference |
| Time 0 | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($157.10) | $157.10 | **$0.00** | **$0.00** | **$0.00** |
| | $80 | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q1/01 | | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($138.29) | $138.29 | **$0.00** | **$0.00** | **$0.00** |
| | | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q2/01 | | | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($119.25) | $119.25 | **$0.00** | **$0.00** | **$0.00** |
| | | | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q3/01 | | | | ($100) | ($100) | ($100) | ($100) | ($100) | ($99.98) | $99.98 | **$0.00** | **$0.00** | **$0.00** |
| | | | | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q4/01 | | | | | ($100) | ($100) | ($100) | ($100) | ($80.47) | $80.47 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | $80 | $80 | $80 | $80 | | | | | |
| End Q1/02 | | | | | | ($100) | ($100) | ($100) | ($31.26) | $38.76 | **$7.50** | **$0.00** | **$7.50** |
| | | | | | | $90 | $90 | $90 | | | | | |
| End Q2/02 | | | | | | | ($100) | ($100) | ($20.97) | $26.00 | **$5.03** | **$0.00** | **$5.03** |
| | | | | | | | $90 | $90 | | | | | |
| End Q3/02 | | | | | | | | ($100) | ($10.55) | $13.08 | **$2.53** | **$0.00** | **$2.53** |
| | | | | | | | | $90 | | | | | |
| End Q4/02 | | | | | | | | | $0.00 | $0.00 | **$0.00** | **$0.00** | **$0.00** |

In Example C1, the CSM at the end of Q1/02 would be calculated as follows:

CSM impact in Q1/02 would be calculated as follows:

| | | |
|---|---|---|
| CSM beginning of Q1/02 | $80.47 | |
| Interest accretion | $0.99 | |
| adjustment for change in FCF | ($29.46) | offset to increase in FCF (PV of $30) |
| Amortization of CSM | ($13.24) | based on remaining CSM * |
| CSM end of Q1/02 | $38.76 | |

* calculation is ($80.47 + $0.99 - $29.46) * 25.46% amortization factor (see Table C-4)

Example C2 also extends Example B1b, this time to illustrate the impact of potential variability in the discount rate for contracts with a short settlement period. All assumptions remain the same as example B1b, except the discount rate drops from 5% to 4% in Q1/02. The PAA LRC would not change, but the GMA LRC would change, creating a difference between the two estimates. That difference is likely to be greater for contracts with longer claims settlement patterns than the one illustrated.

| Table C2 - GMA Calculations - 5% discount rate drops to 4% in Q1/02 - short claims settlement period | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Expected Cashflows | | | | | | | | | | GMA | PAA | Dollar |
| | Q1/01 | Q2/01 | Q3/01 | Q4/01 | Q1/02 | Q2/02 | Q3/02 | Q4/02 | FCF | CSM | LRC | LRC | Difference |
| Time 0 | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($157.10) | $157.10 | **$0.00** | **$0.00** | **$0.00** |
| | $80 | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q1/01 | | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($138.29) | $138.29 | **$0.00** | **$0.00** | **$0.00** |
| | | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q2/01 | | | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($119.25) | $119.25 | **$0.00** | **$0.00** | **$0.00** |
| | | | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q3/01 | | | | ($100) | ($100) | ($100) | ($100) | ($100) | ($99.98) | $99.98 | **$0.00** | **$0.00** | **$0.00** |
| | | | | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q4/01 | | | | | ($100) | ($100) | ($100) | ($100) | ($80.47) | $80.47 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | $80 | $80 | $80 | $80 | | | | | |
| End Q1/02 | | | | | | ($100) | ($100) | ($100) | ($60.58) | $60.72 | **$0.14** | **$0.00** | **$0.14** |
| | | | | | | $80 | $80 | $80 | | | | | |
| End Q2/02 | | | | | | | ($100) | ($100) | ($40.58) | $40.72 | **$0.14** | **$0.00** | **$0.14** |
| | | | | | | | $80 | $80 | | | | | |
| End Q3/02 | | | | | | | | ($100) | ($20.39) | $20.49 | **$0.10** | **$0.00** | **$0.10** |
| | | | | | | | | $80 | | | | | |
| End Q4/02 | | | | | | | | | $0.00 | $0.00 | **$0.00** | **$0.00** | **$0.00** |

Example C3 also extends example B1b, this time to illustrate the impact of potential variability in the discount rate for contracts with a long settlement period. All assumptions remain the same as Example C2, except the drop in the discount rate from 5% to 4% causes the FCF to increase from $80 to $84 (as the present value of a long series of payments to settle claims is sensitive to the discount rate). The PAA LRC would not change, whereas the GMA LRC would, creating a difference between the two estimates, again with the difference greater for contracts with longer claims settlement patterns than the one illustrated. Unlike Example C1, the change in FCF is not offset by a change in CSM, per IFRS 17.B97(a).

| Table C3 - GMA Calculations - 5% discount rate drops to 4% in Q1/02 - long claims settlement period | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Expected Cashflows | | | | | | | | | | GMA | PAA | Dollar |
| | Q1/01 | Q2/01 | Q3/01 | Q4/01 | Q1/02 | Q2/02 | Q3/02 | Q4/02 | FCF | CSM | LRC | LRC | Difference |
| Time 0 | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($157.10) | $157.10 | **$0.00** | **$0.00** | **$0.00** |
| | $80 | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q1/01 | | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($138.29) | $138.29 | **$0.00** | **$0.00** | **$0.00** |
| | | $80 | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q2/01 | | | ($100) | ($100) | ($100) | ($100) | ($100) | ($100) | ($119.25) | $119.25 | **$0.00** | **$0.00** | **$0.00** |
| | | | $80 | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q3/01 | | | | ($100) | ($100) | ($100) | ($100) | ($100) | ($99.98) | $99.98 | **$0.00** | **$0.00** | **$0.00** |
| | | | | $80 | $80 | $80 | $80 | $80 | | | | | |
| End Q4/01 | | | | | ($100) | ($100) | ($100) | ($100) | ($80.47) | $80.47 | **$0.00** | **$0.00** | **$0.00** |
| | | | | | $80 | $80 | $80 | $80 | | | | | |
| End Q1/02 | | | | | | ($100) | ($100) | ($100) | ($48.75) | $60.72 | **$11.96** | **$0.00** | **$11.96** |
| | | | | | | $84 | $84 | $84 | | | | | |
| End Q2/02 | | | | | | | ($100) | ($100) | ($32.66) | $40.72 | **$8.06** | **$0.00** | **$8.06** |
| | | | | | | | $84 | $84 | | | | | |
| End Q3/02 | | | | | | | | ($100) | ($16.41) | $20.49 | **$4.08** | **$0.00** | **$4.08** |
| | | | | | | | | $84 | | | | | |
| End Q4/02 | | | | | | | | | $0.00 | $0.00 | **$0.00** | **$0.00** | **$0.00** |

The CSM amortization factors used in the examples in Appendices B and C are shown in Table C-4:

Table C-4

| | Coverage Unit Calculations with 0% discount rate | | | |
|---|---|---|---|---|
| | undiscounted coverage | discounted coverage | remaining coverage | amortization factor |
| End Q1/01 | 1,000.00 | 1,000.00 | 8,000.00 | 12.50% |
| End Q2/01 | 1,000.00 | 1,000.00 | 7,000.00 | 14.29% |
| End Q3/01 | 1,000.00 | 1,000.00 | 6,000.00 | 16.67% |
| End Q4/01 | 1,000.00 | 1,000.00 | 5,000.00 | 20.00% |
| End Q1/02 | 1,000.00 | 1,000.00 | 4,000.00 | 25.00% |
| End Q2/02 | 1,000.00 | 1,000.00 | 3,000.00 | 33.33% |
| End Q3/02 | 1,000.00 | 1,000.00 | 2,000.00 | 50.00% |
| End Q4/02 | 1,000.00 | 1,000.00 | 1,000.00 | 100.00% |

| | Coverage Unit Calculations with 5% discount rate | | | |
|---|---|---|---|---|
| | undiscounted coverage | discounted coverage | remaining coverage | amortization factor |
| End Q1/01 | 1,000.00 | 1,000.00 | 7,668.65 | 13.04% |
| End Q2/01 | 1,000.00 | 987.88 | 6,750.49 | 14.81% |
| End Q3/01 | 1,000.00 | 975.90 | 5,821.06 | 17.18% |
| End Q4/01 | 1,000.00 | 964.07 | 4,880.23 | 20.49% |
| End Q1/02 | 1,000.00 | 952.38 | 3,927.85 | 25.46% |
| End Q2/02 | 1,000.00 | 940.83 | 2,963.78 | 33.74% |
| End Q3/02 | 1,000.00 | 929.43 | 1,987.88 | 50.30% |
| End Q4/02 | 1,000.00 | 918.16 | 1,000.00 | 100.00% |

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*Draft Educational Note*

# IFRS 17 – Actuarial Considerations Related to Liability for Remaining Coverage in P&C Insurance Contracts

## Committee on Property and Casualty Insurance Financial Reporting

**June 2021**

Document 221061

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*The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.*

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# MEMORANDUM

**To:** Members in the property and casualty insurance area

**From:** Steven W. Easson, Chair
Actuarial Guidance Council

Sarah Ashley Chevalier, Chair
Committee on Property and Casualty Insurance Financial Reporting

**Date:** June 15, 2021

**Subject:** **Draft Educational Note: IFRS 17 – Actuarial Considerations Related to Liability for Remaining Coverage in P&C Insurance Contracts**

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The Committee on Property and Casualty Insurance Financial Reporting (PCFRC) has prepared this draft educational note to provide guidance on various actuarial considerations related to the liability for remaining coverage (LRC) in P&C insurance contracts, in accordance with IFRS 17 requirements. Specific considerations relating to P&C reinsurance contracts are also included. This draft educational note may also be of interest to life insurance practitioners.

This draft educational note is structured in sections as follows:

- Sections 1 and 2, respectively, provide an introduction and a definition of the terminology used in this draft educational note.
- Section 3 provides guidance related to the level of aggregation and financial statement presentation.
- Section 4 provides guidance related to the LRC measured under the general measurement approach (GMA).
- Section 5 provides guidance related to the LRC measured under the premium allocation approach (PAA).
- Section 6 summarizes key considerations for reinsurance contracts issued and held, including the calculation of the loss-recovery component when underlying contracts are onerous.
- Section 7 provides commentary on an illustrative example, provided in an Excel file under separate cover, of the calculation of the loss component.
- Section 8 provides guidance on considerations for determining the expected loss ratio (ELR) to be used in the minimum capital test (MCT) insurance risk calculation.

It is written from the perspective of Canadian actuaries and is not intended to duplicate any other guidance. Additional information can be found in IAA guidance or other CIA documents. The draft educational note *Compliance with IFRS 17 Applicable Guidance* provides guidance to actuaries when assessing compliance with IFRS 17. It is applicable to all educational notes pertaining to IFRS 17 and members are encouraged to review it prior to reading any educational note related to IFRS 17.

A preliminary version of the draft educational note was shared with the following committees for their review and comments, and presented to the Actuarial Guidance Council (AGC) in the months preceding its approval:

- Committee on Life Insurance Financial Reporting
- Committee on Risk Management and Capital Requirements
- Committee on the Appointed/Valuation Actuary
- International Insurance Accounting Committee
- Worker's Compensation Committee
- Group Insurance Practice Committee

A preliminary version of the draft educational note was also shared with the staff of the Accounting Standards Board (AcSB) to broaden consultations with the accounting community. Given that this draft educational note provides actuarial guidance rather than accounting guidance, the AcSB staff review was limited to citations of and any inconsistencies with IFRS 17. CIA educational notes do not go through the AcSB's due process and therefore, are not endorsed by the AcSB.

The PCFRC is satisfied it has sufficiently addressed the material comments received by the various committees and the AGC. The PCFRC notes that this draft educational note incorporates preliminary interpretations on several issues including the definition of issue date and mechanics of the loss recovery component for contracts measured under the premium allocation approach.

The creation of this cover letter and draft educational note has followed the AGC protocol for the adoption of educational notes. In accordance with the CIA's *Policy on Due Process for the Approval of Guidance Material other than Standards of Practice and Research Documents*, this draft educational note has been prepared by the PCFRC and has received approval for distribution from the AGC on June 8, 2021.

The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the

Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.

If you have any questions or comments regarding this draft educational note, please contact Sarah Chevalier at sarahchevalier@axxima.ca.

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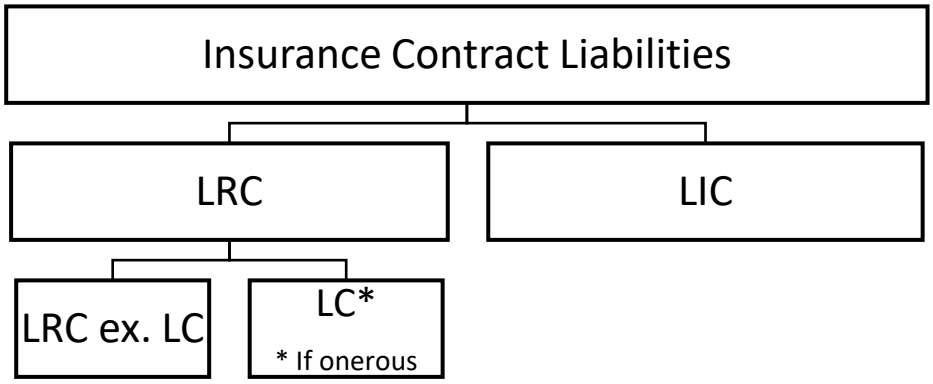
## 1. Introduction

IFRS® 17 Insurance Contracts (IFRS 17) establishes principles for the recognition, measurement, presentation, and disclosure of insurance contracts. The purpose of this draft educational note is to provide practical application guidance on issues relating to the IFRS 17 liability for remaining coverage (LRC) for property and casualty (P&C) entities. In this draft educational note, the use of the notation IFRS 17.XX refers to specific paragraphs of IFRS 17, where XX represents the paragraph number.

Insurance contract liabilities consist of liabilities for incurred claims (LIC) and LRC, both of which are defined terms in IFRS 17 Appendix A. The carrying amount may be in an asset position, in which case the entity would record insurance contract assets, consisting of assets for incurred claims (AIC) and/or assets for remaining coverage (ARC). For simplicity, in this draft educational note, we refer to all of the aforementioned as insurance contract liabilities. If a group of contracts is determined to be onerous, a loss component (LC) is established in the amount of the fulfilment cash flows above the carrying amount of the LRC. In this case, the two components of the LRC are the LRC excluding the LC (LRC ex. LC) and the LC.




LRC is defined within Appendix A of IFRS 17 as:

> An entity's obligation to:
>
> (a) investigate and pay valid claims under existing insurance contracts for insured events that have not yet occurred (ie the obligation that relates to the unexpired portion of the insurance coverage); and
>
> (b) pay amounts under existing insurance contracts that are not included in (a) and that relate to:
>
> (i) insurance contract services not yet provided (ie the obligations that relate to future provision of insurance contract services); or
>
> (ii) any investment components or other amounts that are not related to the provision of insurance contract services and that have not been transferred to the liability for incurred claims.

IFRS 17 prescribes three potential approaches for the measurement of insurance contracts liabilities:

- The general measurement approach (GMA), which is the default approach.
- The premium allocation approach (PAA), which is the optional simplified approach that is available under certain conditions.
- The variable fee approach (VFA), which applies to insurance contracts with direct participation features. As direct participation features are uncommon in P&C contracts, the VFA is not expected to be used by most P&C entities.

While each of these measurement approaches can be applied for the measurement of all insurance contract liabilities, differences between these approaches particularly affect the measurement of the LRC.

**Scope**

This draft educational note supplements the following:

- CIA revised exposure draft (document 220036, March 2020): *Incorporate changes required by the adoption in Canada of IFRS 17 Insurance Contracts, including Principles of International Standard of Actuarial Practice 4 – Actuarial Practice in Relation to IFRS 17 Insurance Contracts, into the Canadian Standards of Practice*
- CIA draft educational note (document 219020, February 2019): *Application of IFRS 17 Insurance Contracts* (IFRS 17 Application EN)

This draft educational note provides specific application guidance, as well as background and general information, to help inform Canadian actuaries when exercising judgment for the measurement of the LRC of P&C entities, including the treatment of groups of onerous contracts. The default GMA approach is discussed first; the PAA, which is a simplification of the GMA, is discussed second. The VFA is not discussed in this draft educational note.

As noted in IFRS 17.4, all references to insurance contracts also apply to reinsurance contracts held[1], unless otherwise indicated by specific references to insurance contracts issued[2] or as described in IFRS 17.60 through IFRS 17.70A for reinsurance contracts held. This draft educational note addresses insurance contracts issued, as well as specific considerations for reinsurance contracts held.

Under IFRS 17, insurance contracts issued and reinsurance contracts held are recognized and presented separately. Sections 2 through 5 present general concepts applicable to both insurance contracts issued and reinsurance contracts held. Section 6 presents additional considerations for reinsurance contracts issued and held.

Equally important to understanding the objective of this draft educational note is understanding what the draft educational note is not intended for. Consistent with IFRS 17, this draft educational note:

[1] Reinsurance contracts held are often referred to as reinsurance ceded.

[2] Reinsurance contracts issued are often referred to as reinsurance assumed. Throughout this draft educational note, the term "insurance contracts issued" encompasses all types of insurance contracts (i.e., both direct insurance contracts issued and reinsurance contracts issued).

- does not prescribe which approach or method to use for the measurement of LRC for a group of insurance contracts (group); and
- does not address the issue of the Appointed Actuary's expression of opinion.

This draft educational note does not provide detailed guidance around the treatment of insurance acquisition costs, including deferral of applicable general and administrative expenses and deferral of insurance acquisition costs to future renewals. The reader is referred to the forthcoming CIA draft educational note on the recovery of acquisition expense cash flows for further information on these topics. Similarly, while this draft educational note includes descriptions of some approaches to derive premium received, it is beyond the scope of this draft educational note to provide an exhaustive list.

In addition, the following educational notes are referenced in the commentary that follows and may serve as additional useful guidance to actuaries:

- CIA draft explanatory report (document 221040), April 2021): *IFRS 17 Expenses*
- CIA revised draft educational note (document 220159, November 2020): *Comparison of IFRS 17 to Current CIA Standards of Practice*
- CIA draft educational note (document 220063, May 2020): *IFRS 17 Risk Adjustment for Non-Financial Risk for Property and Casualty Insurance Contracts* (PCFRC Risk Adjustment EN)
- CIA draft educational note (document 220053, April 2020): *IFRS 17 – Actuarial Considerations Related to P&C Reinsurance Contracts Issued and Held* (PCFRC Reinsurance EN)
- CIA revised draft educational note (document 220103, December 2020): *Assessing Eligibility for the Premium Allocation Approach Under IFRS 17 for Property & Casualty and Life & Health Insurance Contracts* (PAA Eligibility EN)
- CIA draft educational note (document 220128, August 2020): *IFRS 17 Discount Rates and Cash Flow Considerations for Property and Casualty Insurance Contracts* (PCFRC Discounting EN)

In writing this draft educational note, the PCFRC followed these guiding principles:

- Consider Canadian-specific perspectives rather than simply repeating international actuarial guidance.
- Develop application guidance that is consistent with IFRS 17 and applicable Canadian actuarial standards of practice and educational notes without unnecessarily narrowing the policy choices available under IFRS 17.
- Consider practical implications associated with the implementation of potential approaches and methods; in particular, ensure that due consideration is given to options that do not require undue cost and effort to implement.

## 2. Definitions

The following terminology is used in this draft educational note:

**Contractual service margin (CSM):** Per Appendix A of IFRS 17, "A component of the carrying amount of the asset or liability for a group of insurance contracts representing the unearned profit the entity will recognise as it provides insurance contract services under the insurance contracts in the group."

**Contract boundary:** The contract boundary distinguishes future cash flows to be considered in the measurement of the insurance contract from other future cash flows. Per IFRS 17.34, "Cash flows are within the boundary of an insurance contract if they arise from substantive rights and obligations that exist during the reporting period in which the entity can compel the policyholder to pay the premiums or in which the entity has a substantive obligation to provide the policyholder with insurance contract services …"

**Coverage period:** Per Appendix A of IFRS 17, "The period during which the entity provides insurance contract services. This period includes the insurance contract services that relate to all premiums within the boundary of the insurance contract."

**Coverage units:** Coverage units are defined in IFRS 17.B119(a) as "… the quantity of insurance contract services provided by the contracts in the group, determined by considering for each contract the quantity of the benefits provided under a contract and its expected coverage period."

**Date of initial recognition:** For a contract that has been issued, the earliest of the date coverage begins, the date the first premium is due, and the date the contract is onerous.

**Fulfilment cash flows:** Present value of future cash flows plus the risk adjustment for non-financial risk.

**General measurement approach (GMA):** Standard approach laid out in IFRS 17 for measuring insurance contract liabilities.

**Group of insurance contracts (group):** As defined in Appendix A of IFRS 17, "A set of insurance contracts resulting from the division of a portfolio of insurance contracts into, at a minimum, contracts issued within a period of no longer than one year and that, at initial recognition: (a) are onerous, if any; (b) have no significant possibility of becoming onerous subsequently, if any; or (c) do not fall into either (a) or (b), if any."

**Issue date:** The date when the entity enters into a contractual obligation to provide the insurance coverage at given terms. The issue date could precede the date the coverage begins for P&C contracts. Determining issue date for a group of contracts would likely be performed by an entity's legal professionals.

**Loss component (LC):** Component of the LRC depicting the net outflow for an onerous group of insurance contracts issued, which results in the carrying amount of the LRC for the group being equal to the fulfilment cash flows and the CSM for the group being zero. The LC, and subsequent reversals in the LC, are excluded from the determination of insurance revenue.

**Loss-recovery component:** Component of the ARC depicting the recoveries from reinsurance contracts held applicable to a group of underlying onerous contracts. The loss-recovery component is excluded from the allocation of premiums paid to the reinsurer.

**Onerous contract:** Based on IFRS 17.47,

> An insurance contract is onerous at the date of initial recognition if the fulfilment cash flows allocated to the contract, any previously recognised insurance acquisition cash flows and any cash flows arising from the contract at the date of initial recognition in total are a net outflow.

A group of insurance contracts may become onerous (or more onerous) on subsequent measurement when unfavourable changes relating to future service in the fulfilment cash flows exceed the CSM.

**Payment pattern:** Expected pattern of payment of future cash flows.

**Premium allocation approach (PAA):** Simplification of the GMA that may be used by an entity to measure a group of insurance contracts if, at the inception of the group, it reasonably expects that the PAA would produce a measurement of the LRC for the group that would not differ materially from the one that would be produced by applying the GMA, or if the coverage period of each contract in the group is one year or less.

**Present value:** Future cash flows discounted to the valuation date.

**Portfolio of insurance contracts (portfolio):** Insurance contracts subject to similar risks and managed together.

**Reinsurance contract:** An insurance contract issued by one entity (the reinsurer) to compensate another entity for claims arising from one or more insurance contracts issued by that other entity (underlying contracts).

## 3. Level of aggregation and financial statement presentation

Under IFRS 17, insurance contracts are aggregated into portfolios, which are then divided into groups considering, amongst other things, the expectation regarding the net cash flows of the contracts at initial recognition (i.e., whether the contracts are expected to be onerous) and the cohort issue date. Additional guidance on separating insurance contracts into portfolios and groups is provided in Chapter 1 of the IFRS 17 Application EN.

While the recognition and the measurement of the LRC is performed at the group level, it is the combination of the LIC and LRC for portfolios of contracts that dictates the presentation of insurance contracts in the statement of financial position. An insurance contract liability results when expected cash outflows are greater than expected cash inflows for the portfolio (including LIC and LRC). In the rare circumstance that expected cash inflows are greater than expected cash outflows for a portfolio of direct contracts, an insurance contract asset is booked. Portfolios of reinsurance contracts held are usually in an asset position and portfolios of reinsurance contracts issued are usually in a liability position.

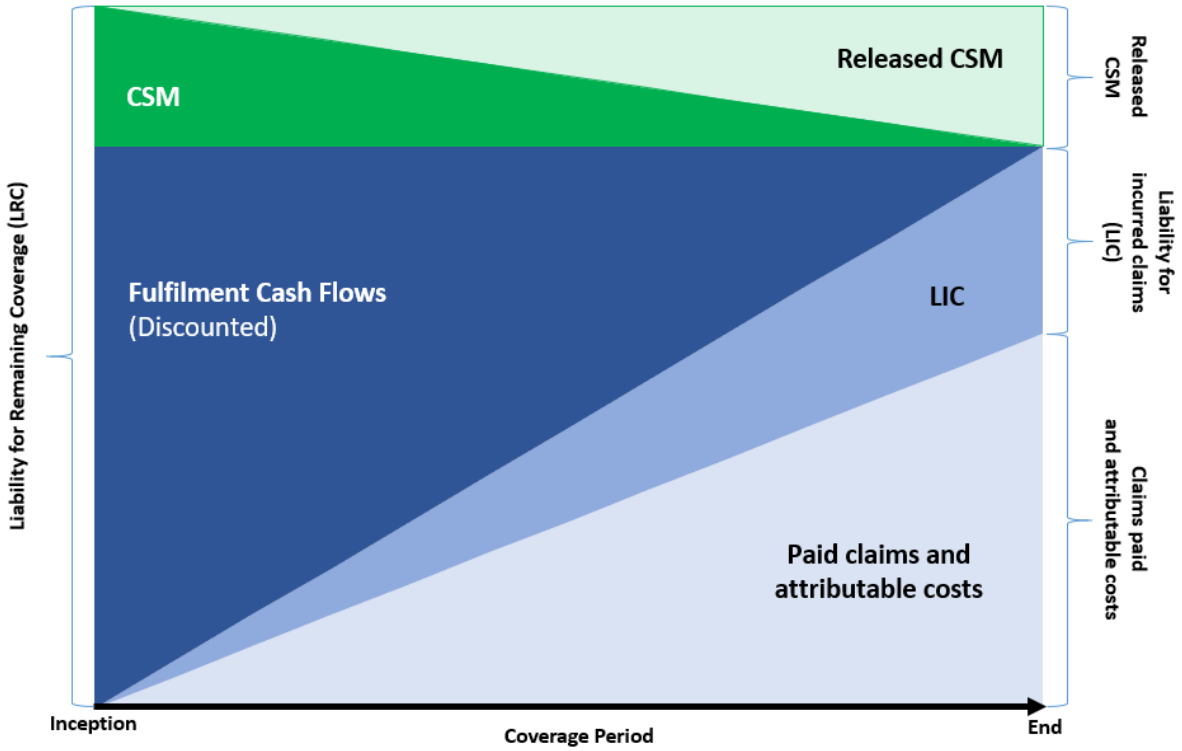
## 4. LRC under the GMA – Insurance contracts issued

### 4.1. Definition

The GMA is the standard approach for measuring insurance contracts under IFRS 17. Under the GMA, the LRC is the sum of the following elements (IFRS 17.32):

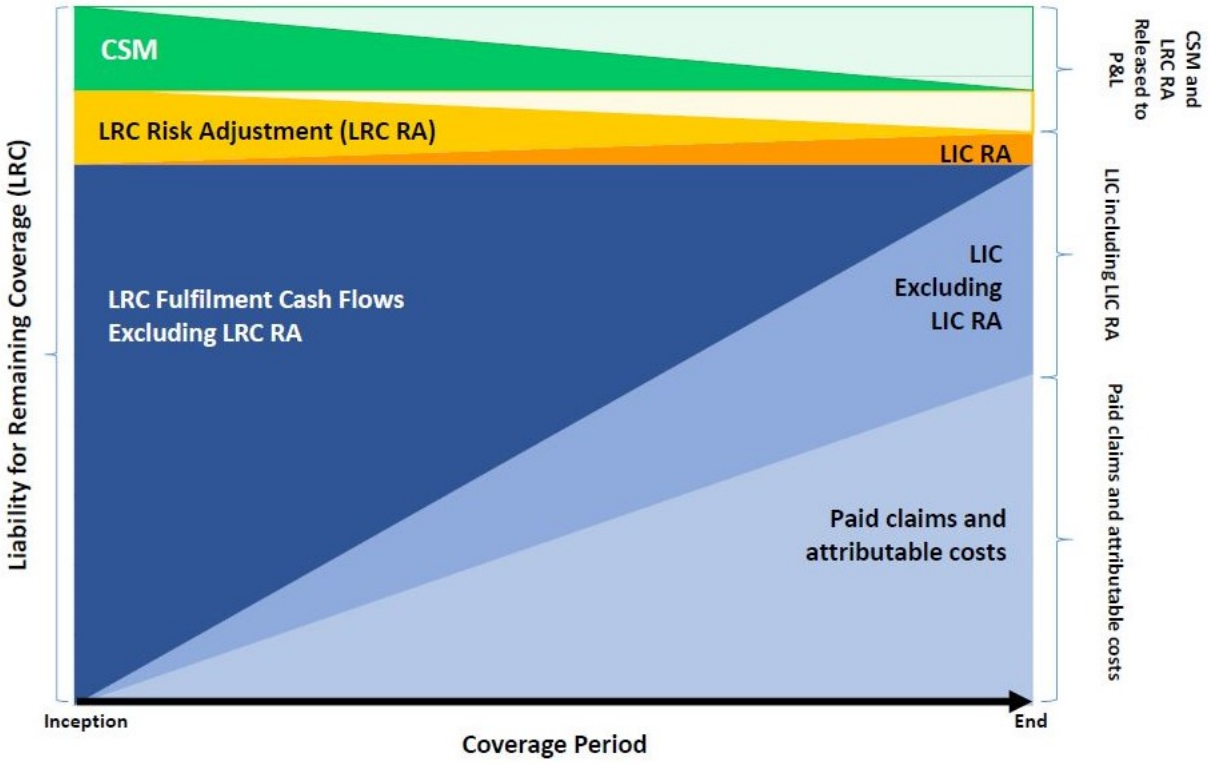
- The fulfilment cash flows related to future service, which comprise:
  - estimates of future cash flows;
  - an adjustment to reflect the time value of money and financial risk (to the extent financial risk is not reflected in the estimates of cash flows); and
  - a risk adjustment for non-financial risk (risk adjustment).
- The CSM.

The following diagram illustrates the components of the insurance contract liabilities throughout the coverage period of an of insurance contract that is not onerous:




The diagram assumes that premium is collected upfront, that acquisition costs are paid at inception, and there are no changes to the valuation assumptions. At initial recognition, the LRC is comprised of the fulfilment cash flows and the CSM. As insurance services are provided, the LRC is reduced and is replaced by paid claims and attributable costs and the LIC. The CSM for a group of insurance contracts is released and recognized in profit over the coverage period, reflecting the insurance contract services provided over each period.

A more detailed example including the risk adjustment is provided below. This diagram illustrates the risk adjustment initially as a component of the LRC at inception and, at the end of the coverage period, as a component of both the LIC and of released profit.




### 4.2. Allocations

IFRS 17.33 requires the LRC to be determined at the group level. The CSM is determined at the group level, however fulfilment cash flows may be determined at a different level of aggregation and then allocated to groups of contracts. IFRS 17.24 provides that, "… To measure a group of contracts, an entity may estimate the *fulfilment cash flows* at a higher level of aggregation than the group or portfolio, provided the entity is able to include the appropriate fulfilment cash flows in the measurement of the group … by allocating such estimates to groups of contracts."

Similarly, it would be acceptable to estimate cash flows at a lower level of aggregation (e.g., coverage) and aggregate up to groups of contracts.

### 4.3. Estimates of future cash flows

The estimates of future cash flows include all cash flows that are within the contract boundary of each contract in the group.

#### 4.3.1. Contract boundary

IFRS 17.34 states:

> Cash flows are within the boundary of an insurance contract if they arise from substantive rights and obligations that exist during the reporting period in which the entity can compel

the policyholder to pay the premiums or in which the entity has a substantive obligation to provide the policyholder with insurance contract services … A substantive obligation to provide insurance contract services ends when:

(a) the entity has the practical ability to reassess the risks of the particular policyholder and, as a result, can set a price or level of benefits that fully reflects those risks; or

(b) both of the following criteria are satisfied:

(i) the entity has the practical ability to reassess the risks of the portfolio of insurance contracts that contains the contract and, as a result, can set a price or level of benefits that fully reflects the risk of that portfolio; and

(ii) the pricing of the premiums up to the date when the risks are reassessed does not take into account the risks that relate to periods after the reassessment date.

For most P&C insurance contracts, the contract boundary is delineated by the date of initial recognition and the expiry date of the contract, with any premiums, claims and attributable expenses relating to insurance risk on or before the expiry date included in measurement. However, a number of other factors could influence the contract boundary, including, but not limited to the following:

- Restrictions on the entity's ability to reprice after expiration of the insurance contract (e.g., rate guarantees for periods extending after the insurance contract expiry date, or caps on the amount of rate action that the entity can take), which would likely extend the contract boundary beyond the insurance contract expiry date.
- Termination or cancellation clauses included in some insurance contracts that may grant both parties to the contract the right to unilaterally terminate the contract prior to its expiry date. In this situation, the contract boundary could be shorter than the insurance contract effective period if the termination provision has commercial substance, which means that the entity has the practical ability to terminate the contract after considering all the substantive rights and obligations of the contract.
- The treatment of claims with insurance risk in the settlement pattern. Although such claims are typically treated by LIC by P&C insurance entities, the entity has the choice to include such claims in settlement in LIC or LRC unless the business is acquired, in which case such claims in settlement are included in LRC.

Refer to Section 3, Coverage Period Consideration, of the PAA Eligibility EN for a more complete discussion on contract boundary issues.

#### 4.3.2. Measurement

The types of cash flows within the contract boundary are described in IFRS 17.B65 and IFRS 17.B66, and include both inflows such as premiums and outflows such as claims and directly attributable expenses.

**Premiums**

Premium inflows would normally be determined based on the balance of premiums receivable for the group of insurance contracts. The estimate would reflect, on an expected value basis, how policy-holders will exercise the contract features available, including the option to cancel the contract. The risk that the actual behaviour may differ from the expected behaviour is reflected in the risk adjustment selection.

**Claims**

The largest cash outflow usually relates to future claims and claim adjustment expenses. They are typically estimated by applying a selected expected loss ratio to the unexpired portion of the total premium receipts[3].

Various evaluation methods may be used to determine the future expected loss ratios in connection with the unexpired portion of insurance contracts. The method selected by the actuary may depend on a number of considerations including but not limited to the complexity of the business segments or the characteristics of the entity. For example, the future expected loss ratios may be determined based on the actuary's valuation of LIC, on the entity's budget (if reasonable), on the results of a ratemaking analysis or on an ad hoc analysis, as considered appropriate.

Generally, future expected loss ratios are based on the entity's recent experience adjusted to reflect the period during which the insurance coverage will be provided and the revenue will be earned. The actuary would consider the earning pattern underlying the calculation of the unexpired coverage, assess whether it reflects the exposure to risk, and select assumptions accordingly. Examples of adjustments to the historical experience would include, but are not limited to, the following:

- Loss trends applied to adjust historical cost levels to the average accident date underlying the unexpired portion of the insurance contracts.
- Impacts from legislative changes (including mandated benefit modifications) that are substantively enacted.
- Recent court decision impacts relating to insurance coverage.
- Changes in mix of business.
- On-level factors applied to adjust historical experience to the rate level underlying the unexpired portion of the insurance contracts.
- Catastrophe and large losses loadings.
- Seasonality adjustments to the indicated expected loss ratios may need to be applied if the claims occurrence pattern is not uniform throughout the exposure period of the unexpired coverage (e.g., seasonal occurrences of hurricanes). Depending on the line of business, the seasonality adjustment may not be significant. However, for some business segments (e.g., property catastrophe treaty reinsurance), seasonality may be a meaningful consideration.

[3] Calculated based on the unearned premium.

- Insurance contract terms taking into account the coverage period of the insurance contract and the future period covered by the unexpired portion of the total premium receipts. For example, for insurance contracts with a term longer than 12 months (such as warranties or multi-year contracts), assumptions for the expected loss ratio need to take into consideration trends that are expected over the remaining term of these insurance contracts.

**Expenses**

Information on expenses that are part of the insurance contract boundary, and therefore the future cash flows comprised within the unexpired portion of the total premium receipts, is provided in the draft explanatory report on IFRS 17 Expenses for Property & Casualty and Life & Health Insurance[4].

### 4.4. Effect of discounting

It is typical to determine the aggregate amount of cash flows for the various components of the LRC as described in Section 4.3, and then to determine the timing of these cash flows by applying the relevant payment pattern to the aggregate amount for each component of the LRC.

The present value of the future cash flows is then determined by discounting these cash flows based on their timing and the applicable discount rates.

#### 4.4.1. Selecting payment patterns for the future cash flows

The payment pattern for premiums receivable is typically based on the schedule of installment premiums for the group of contracts.

For a given business segment, the payment pattern for claims and claim adjustment expenses in the LRC is generally consistent with that used for discounting the claims and claim adjustment expenses in the LIC. Payment patterns for the LIC are normally selected and applied on an accident year basis, and it is typically assumed that the average accident date occurs at the midpoint of the accident year. The PCFRC Discounting EN provides additional guidance on selecting a payment pattern for the LIC.

When estimating the timing of LRC cash flows on a group basis, it is necessary to either:

- estimate a payment pattern on a group basis; or
- adjust the accident year payment pattern used for LIC to a pattern consistent with the average accident date of the group.

Section 7 describes a method for adjusting an LIC payment pattern for the average accident date of the unexpired coverage of a group of contracts.

When expenses vary with claims or premiums, it may be reasonable to assume that they follow the same payment pattern as for claims or premiums respectively.

[4] Canadian Institute of Actuaries, *Draft Explanatory Report: IFRS 17 Expenses* (2021).

#### 4.4.2. Discount rates

The future cash flows are discounted using a yield curve as at the valuation date that is consistent with the timing, currency, and liquidity characteristics of the future cash flows.

Please refer to the PCFRC Discounting EN, in particular Sections 4 to 6, for further considerations in determining the applicable yield curve.

### 4.5. Risk adjustment

Guidance on the risk adjustment can be found in the PCFRC Risk Adjustment EN.

### 4.6. Contractual service margin

As per IFRS 17.38, "The contractual service margin is a component of the asset or liability for the group of insurance contracts that represents the unearned profit the entity will recognise as it provides insurance contract services in the future." As such, a CSM exists only for groups of contracts that are not onerous while for groups of onerous contracts, a CSM does not exist but instead, a loss component exists.

At initial recognition, the CSM is set at the amount such that no profit is recognized, i.e., total cash inflows minus total cash outflows for the group, with a floor of zero. An implication of this is that in addition to estimating fulfilment cash flows as at the valuation date, the actuary must also estimate fulfilment cash flows as at the date of initial recognition. The fulfilment cash flows as at the date of initial recognition would include all claims and expenses attributable to the group, including any cash flows incurred before initial recognition.

At subsequent reporting dates, the CSM is rolled forward applying IFRS 17.44:

> For *insurance contracts without direct participation features*, the carrying amount of the contractual service margin of a group of contracts at the end of the reporting period equals the carrying amount at the start of the reporting period adjusted for:
>
> (a) the effect of any new contracts added to the group (see paragraph 28);
>
> (b) interest accreted on the carrying amount of the contractual service margin during the reporting period, measured at the [locked-in] discount rates specified in paragraph B72(b);
>
> (c) the changes in fulfilment cash flows relating to future service as specified in paragraphs B96–B100, except to the extent that:
>
> (i) such increases in the fulfilment cash flows exceed the carrying amount of the contractual service margin, giving rise to a loss (see paragraph 48(a)); or
>
> (ii) such decreases in the fulfilment cash flows are allocated to the loss component of the liability for remaining coverage applying paragraph 50(b).
>
> (d) the effect of any currency exchange differences on the contractual service margin; and
>
> (e) the amount recognised as insurance revenue because of the transfer of insurance contract services in the period, determined by the allocation of the contractual service margin remaining at the end of the reporting period (before

any allocation) over the current and remaining coverage period applying paragraph B119.

Under step (e), the CSM at the end of the reporting period (before recognizing any amounts in profit or loss to reflect the insurance contract services provided in the period) is allocated equally to each coverage unit provided in the current period and those expected to be provided in the future. The amount allocated to coverage unit provided in the current period is recognized in profit or loss.

**4.7. Coverage units**

Coverage units are used to determine the amount of the CSM that is recognized in profit and loss in a reporting period. The CSM is released based on coverage units representing the insurance contract service provided in the period compared to the insurance contract services expected to be provided in the future. This assumes that the insurance contracts do not provide investment return services, as is generally the case with P&C insurance contracts.

The number of coverage units in a group is the quantity of insurance contract services provided by the contracts in the group, determined by considering for each contract the quantity of the insurance contract services provided under a contract and its expected coverage duration.

The determination of coverage units is not an accounting policy choice but involves judgment and estimates to best achieve the principle of reflecting the insurance contract services provided in each period. In applying judgment, the actuary would follow the key principles below:

- Quantity of benefits would generally not be based on expected claims or release of risk adjustment. The quantity of benefits provided under a contract is related to the amount that can be claimed by the policy-holder and not the expected costs to be incurred by the entity. The different levels of service across periods need to be reflected in the determination of coverage units. The expected contract duration considers expected lapses and cancellations.
- It is optional to use discounting in the calculation of quantity of benefits provided under a contract. If the actuary has opted to use discounting, the selection of discount rates to be used for that purpose would be based on judgment, but applied consistently, as IFRS 17 is silent on this topic.
- The coverage period extends to the end of the period in which insurance contract services are provided and would not extend to the period over which claims are settled (unless claims in settlement are included in LRC rather than LIC).

IFRS 17 does not prescribe a particular form or basis for the definition of coverage units. Therefore, as a general statement, any coverage unit construct that satisfies the above requirements would in theory be an acceptable approach. Section 6.16 of the IFRS 17 Application EN lists a number of methods that may result in reasonable proxies for coverage units including straight line allocation reflecting the expected number contracts in the group, use of maximum contract cover in each period, use of cover amounts for which the policy-

holder could validly claim, and use of premiums if determined to approximate the quantity of benefits.

Detailed guidance on the selection of appropriate coverage units for the purpose of amortizing the CSM for insurance contracts and examples of CSM amortization can be found in the draft CIA educational note *IFRS 17 Coverage Units for Life and Health Insurance Contracts*. Section 6, Contractual Service Margin and Loss Component, of the CIA draft educational note *Application of IFRS 17 Insurance Contracts* provides information about the CSM and how it might change due to a range of factors.

The appendices of the International Accounting Standards Board® (IASB)'s May 2018 Transition Resource Group (TRG) paper AP05[5], prepared by IASB staff for the TRG meeting discussion, contain several examples of coverage units. Possible bases for determining amortization patterns based on coverage units for P&C insurance contracts include the following:

| **Type of product** | **Amortization pattern** |
|---|---|
| Contracts with same policy limit throughout the coverage period | Uniform |
| Contracts with decreasing policy limit over the coverage period (e.g., mortgage insurance contracts) | Declining |
| Contracts with increasing policy limit over the coverage period (e.g., product warranty contracts with replacement coverage) | Increasing |

The table above presents the coverage units for a single insurance contract over the coverage period. When determining the coverage units for the group of insurance contracts, the actuary would consider:

- the expectation of contract lapses (including cancellations) which would decrease coverage units; and
- the consequence of weighing the coverage units for the individual contracts included within the group, including the effect of new contracts recognized in the group prior to the reporting date.

For example, assume that an insurance contract with a limit of $1,000,000 has a coverage period of January 1, 2023 to December 31, 2023. The coverage units for this contract would be calculated as follows:

[5] IFRS Foundation, 'Determining quantity of benefits for identifying coverage units,' https://cdn.ifrs.org/-/media/feature/meetings/2018/may/trg-for-ifrs-17/ap05-quantity-of-benefits-for-identifying-coverage-units.pdf, (accessed 10 May 2021).

| Reporting period | (1) Coverage Units in the Reporting Period | (2) Expected Remaining Coverage Units at End of the Reporting Period | (3) = (1) / [(1)+(2)] % Opening CSM Amortized in the Reporting Period | (4) Reporting Period Opening CSM | (5) = (3) x (4) Amortiza-tion of CSM | (6) = (4) – (5) Ending CSM | (7) = (1) / [(1) Total] Equivalent Incremental CSM Earning Pattern |
|---|---|---|---|---|---|---|---|
| Q1 2023 | 1,000,000 | 3,000,000 | 25.0% | 1,000 | 250 | 750 | 25% |
| Q2 2023 | 1,000,000 | 2,000,000 | 33.3% | 750 | 250 | 500 | 25% |
| Q3 2023 | 1,000,000 | 1,000,000 | 50.0% | 500 | 250 | 250 | 25% |
| Q4 2023 | 1,000,000 | 0 | 100.0% | 250 | 250 | 0 | 25% |
| Total | 4,000,000 | | | | | | 100% |

In the above example, assume that the contract had a CSM at initial recognition of $1,000, there is no discounting and there are no changes in assumptions over the contract period. Then:

- in Q1, 25.0% x $1,000 = $250 of the CSM would be recognized as profit, and the ending CSM would be $1,000 - $250 = $750;
- in Q2, 33.3% x $750 = $250 of the CSM would be recognized as profit, and the ending CSM would be $750 - $250 = $500;
- in Q3, 50.0% x $500 = $250 of the CSM would be recognized as profit, and the ending CSM would be $500 - $250 = $250; and
- in Q4, 100.0% x $250 of the CSM would be recognized as profit, and the ending CSM would be $250 - $250 = $0 as the contract is expired.

If this contract is cancelled at the end of Q3 2023, then the coverage units would be calculated as follows:

| Reporting period | (1) Coverage Units in the Reporting Period | (2) Expected Remaining Coverage Units at End of the Reporting Period | (3) = (1) / [(1)+(2)] % Opening CSM Amortized in the Reporting Period | (4) Reporting Period Opening CSM | (5) = (3) x (4) Amortiza-tion of CSM | (6) = (4) – (5) Ending CSM |
|---|---|---|---|---|---|---|
| Q1 2023 | 1,000,000 | 3,000,000 | 25.0% | 1,000 | 250 | 750 |
| Q2 2023 | 1,000,000 | 2,000,000 | 33.3% | 750 | 250 | 500 |
| Q3 2023 | 1,000,000 | 0 | 100.0% | 500 | 500 | 0 |
| Q4 2023 | 0 | 0 | n/a | 0 | 0 | 0 |

In the above example, assume that the contract had a CSM at initial recognition of $1,000, there is no discounting and there are no changes in assumptions over the contract period. Then:

- The coverage unit and CSM calculations are identical to the previous example.

  Given that the contract is cancelled at the end of Q3, there are no expected remaining coverage units at the end of Q3 [Column (2)]. Therefore, the full CSM is amortized and the ending CSM at the end of Q3 is zero.

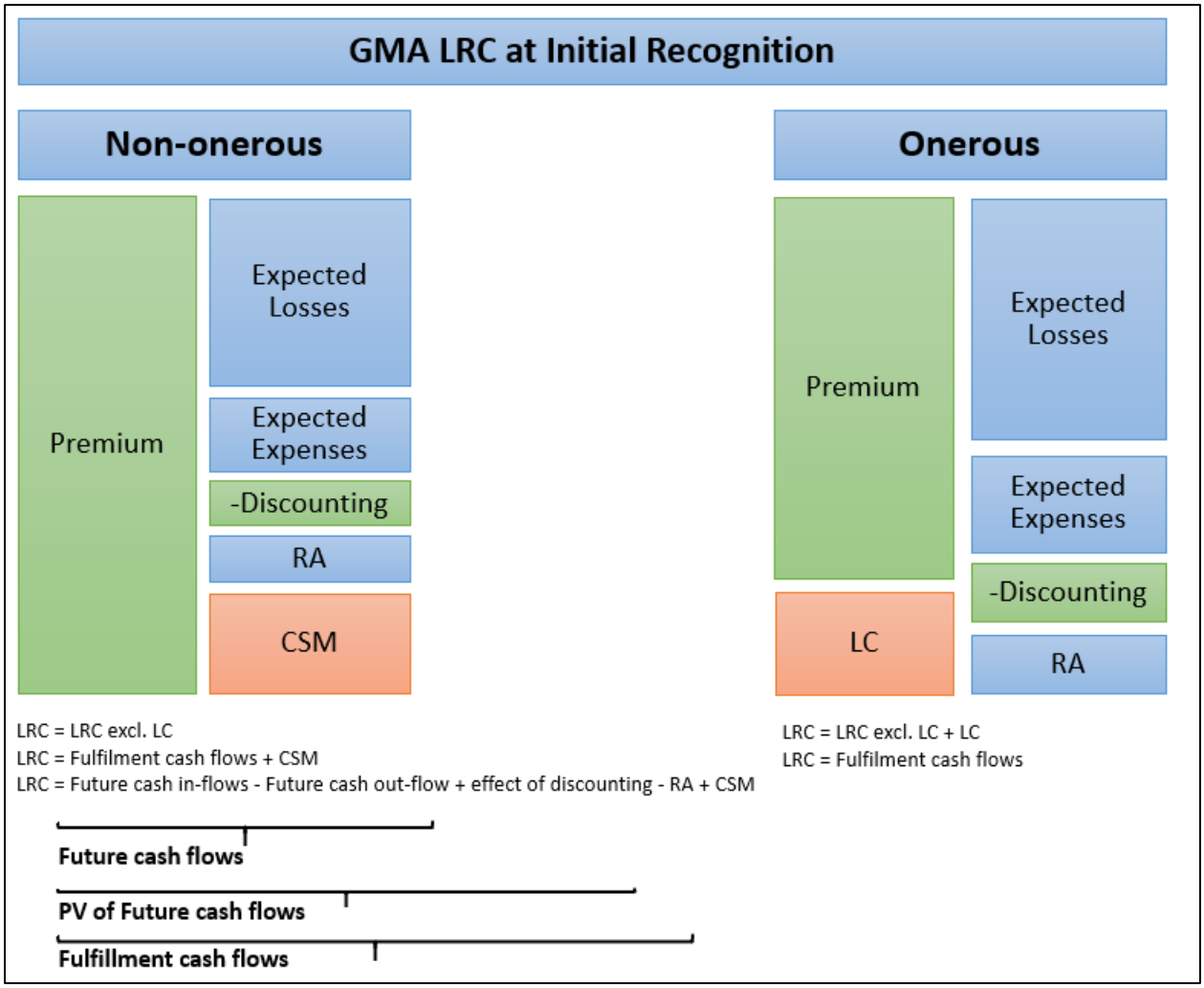
### 4.8. Loss component

**Initial recognition**

Based on IFRS 17.47, "An insurance contract is onerous at the date of initial recognition if the fulfilment cash flows allocated to the contract, any previously recognised insurance acquisition cash flows and any cash flows arising from the contract at the date of initial recognition in total are a net outflow."

In such cases, the CSM is floored at zero, a loss is recognized in the statement of financial performance and the carrying amount of the LRC is equal to the fulfilment cash flows. The amount of this loss is recognized in the statement of financial position as a LC in the LRC. An LC for a group of insurance contracts is reflected in the LRC on the issue date of the insurance contracts.

The diagram below compares the components of non-onerous to onerous groups at initial recognition.




**Subsequent measurement**

Assuming that there are no changes in underlying assumptions, the LC is expected to be systematically decreased. If there are changes in underlying assumptions that are favourable, the changes would be allocated to the LC until it is reduced to zero, and then a CSM may be re-established.

Conversely, a group of insurance contracts can be classified as non-onerous at initial recognition and become onerous at a subsequent reporting period if unfavourable changes in the fulfilment cash flows exceed the carrying amount of the CSM. In such a case, the CSM would be reduced to zero and then an LC would be established.

The entity is required to separately track the portion of the LRC that is related to the LC. IFRS 17.50 states that:

> After an entity has recognised a loss on an onerous group of insurance contracts, it shall allocate:
>
> (a) the subsequent changes in fulfilment cash flows of the liability for remaining coverage specified in paragraph 51 on a systematic basis between:

(i) the loss component of the liability for remaining coverage; and

(ii) the liability for remaining coverage, excluding the loss component.

(b) solely to the loss component until that component is reduced to zero:

(i) any subsequent decrease relating to future service in fulfilment cash flows allocated to the group arising from changes in estimates of future cash flows and the risk adjustment for non-financial risk; …

For groups measured under the GMA, an example of a systematic allocation of subsequent changes in fulfilment cash flows of the LRC between the LC and the LRC excluding the LC can be found in IE93 of the IASB publication Illustrative examples on IFRS 17 Insurance Contracts.

Per IFRS 17.51(a), only the following subsequent changes in the fulfilment cash flows of the LRC would need to be allocated, "(a) estimates of the present value of future cash flows for claims and expenses released from the liability for remaining coverage because of incurred insurance service expenses; (b) changes in the risk adjustment for non-financial risk recognised in profit or loss because of the release from risk; and (c) insurance finance income or expenses."

If, at subsequent reporting periods, there are favourable changes in the fulfilment cash flows for a group of contracts such that the LC is reduced to zero and the entity expects to recognise profit as it provides insurance contract services in the future (i.e., on the unexpired portion of the insurance coverage), then a CSM is established or re-established.

## 5. LRC under PAA – Insurance contracts issued

The PAA measurement for insurance contracts issued is set out in IFRS 17.55–59. IFRS 17 refers to the PAA as a simplified measurement approach, allowing for simplifications in the measurement, recognition and disclosures associated with insurance contract liabilities under certain conditions. While this draft educational note only covers the PAA measurement of the LRC, the PAA also allows for a simplification of the measurement of the LIC with respect to discounting when all cash flows are expected to be received or paid within one year of the date claims are incurred (refer to IFRS 17.59(b) for more details).

The key simplification for LRC is that for groups of contracts that are not onerous, there is no requirement to calculate fulfilment cash flows (i.e., estimates of future cash flows, effect of discounting and risk adjustment) nor is it necessary to identify and amortize the CSM. For groups of contracts that are onerous, the LC must be measured based on the fulfilment cash flows and therefore there is no simplification in the measurement approach.

The PAA can be applied to groups that meet the PAA eligibility criteria at inception. Contracts with a coverage period of one year or less, such as most P&C insurance contracts, would automatically qualify for PAA; however, for longer duration contracts, a quantitative test may be required. For more information on PAA eligibility, the actuary may refer to the PAA Eligibility EN.

As described in Sections 5.1 and 5.2 of this draft educational note, once a group of contracts qualifies for the PAA, the LRC excluding the LC ("LRC ex. LC") is calculated the same way for onerous and non-onerous contracts. The following table summarizes the total LRC for onerous and non-onerous groups:

| | Non-onerous group | Onerous group |
|---|---|---|
| **Total LRC** | LRC ex. LC | LRC ex. LC **+** LC |

### 5.1. Initial recognition

Per IFRS 17.55(a), on initial recognition, the carrying amount of the LRC ex. LC is measured as:

**LRC ex. LC at initial recognition**

- \+ the **premiums**, if any, **received** at initial recognition;
- \- any **insurance acquisition cash flows** at that date, unless the entity chooses to recognise the payments as an expense; and
- +/- any amount arising from the derecognition at that date of: any asset for insurance acquisition cash flows & any other asset or liability previously recognised for cash flows related to the group of contracts;

The LRC ex. LC for the group, at initial recognition, is derived as any premiums received at initial recognition, less acquisition cash flows paid (unless they are recognized as expenses when incurred). The third point in the definition refers to acquisition cash flows and other cash flows such as pre-paid premium that are incurred prior to initial recognition.

### 5.2. Subsequent measurement

Per IFRS 17.55(b), at the end of each subsequent reporting period, the carrying amount of the LRC ex. LC under the PAA is calculated as:

**LRC ex. LC at subsequent measurement**

- the carrying amount at the start of the reporting period:
- \+ the **premiums received** in the period;
- \- **insurance acquisition cash flows**; unless the entity chooses to recognise the payments as an expense;
- \+ any amounts relating to the amortisation of insurance acquisition cash flows recognised as an expense in the reporting period; unless the entity chooses to recognise the payments as an expense;
- \+ any adjustment to a financing component;
- \- the **amount recognised as insurance revenue** for insurance contract services provided in that period; and
- \- any investment component paid or transferred to the liability for incurred claims.

In simpler terms, at subsequent measurement, the LRC ex. LC for the group of contracts reflects:

- premiums received up until the end of the reporting period less insurance revenue associated with premium for the insurance contract services provided up until the end

of the reporting period[6], which is mathematically equivalent to the unexpired portion of the total premium receipts[7], net of premiums receivable;

- less acquisition costs that are yet to be expensed; and
- plus adjustments for financing and investment components.

Guidance on premiums, acquisition costs and adjustments for financing and investment comments are provided in Sections 5.4, 5.5, and 5.6 respectively.

**Example**

A group of insurance contracts are issued with a coverage period of two years. The following are details of the cash flows:

| Description | Total amount | Additional information |
|---|---|---|
| Expected premiums | $1,000 | Received at inception |
| Directly attributable acquisition expenses | $200 | Paid at inception |
| Directly attributable maintenance expenses | $50 | Incurred in year 1 |
| Non-directly attributable acquisition expenses | $30 | Paid at inception |
| Non-directly attributable maintenance expenses | $50 | $25 per year |
| Also assume the following:<br>• No claims are incurred in Year 1<br>• Expected premium receipts allocated on the basis of the passage of time<br>• Acquisition costs are deferred and amortized over the 2-year coverage period<br>• There is no discounting | | |

Insurance service result for Year 1:

| | | |
|---|---|---|
| ***Insurance Revenue*** | | |
| Revenue recognized under the premium allocation approach | 500 | **$1,000 expected premiums over 2 years** |
| ***Total iInsurance Revenue*** | ***500*** | |
| ***Insurance Service Expenses*** | | |
| Incurred claims (excluding investment components) and other incurred insurance service expenses | 50 | **$50 maintenance expenses** |
| Amortization of insurance acquisition cash flows | 100 | **$200 amortized over 2 years** |
| ***Total Insurance Service Expenses*** | ***150*** | |
| ***Insurance Service Result*** | ***350*** | |
| ***Other Expenses*** | ***55*** | **$30 acquisition and $25 maintenance non directly attributable expenses** |
| ***Profits / Losses*** | ***295*** | |

[6] The insurance revenue associated with premium for the insurance contract services provided up until the end of the reporting period is commonly referred to as "earned premium".

[7] The unexpired portion of the total premium receipts is commonly referred to as "unearned premium."

The LRC balance at the end of Year 1 consists of:

- premiums received, less insurance revenue recognized: $1,000 - $500 = $500; and
- less acquisition costs that are yet to be expensed: $200 - $100 = $100.

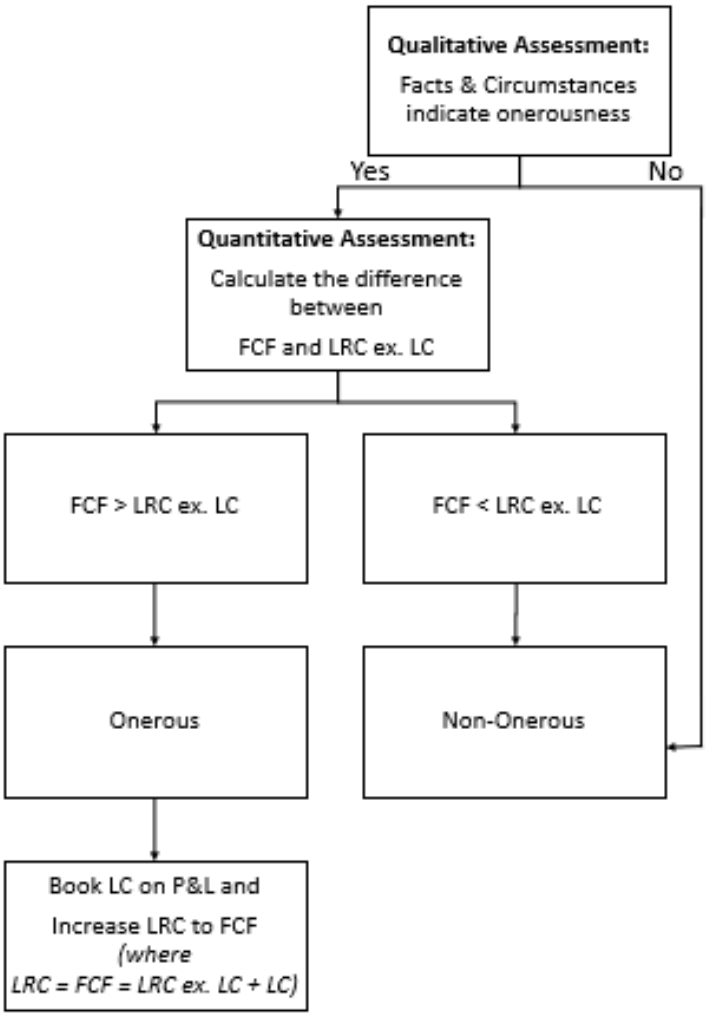
Given that there are no adjustments for financing and investment components, and assuming that the contracts are not onerous, the LRC is $500 - $100 = $400.

**5.3. Onerous groups of contracts**

While IFRS 17 does not prescribe the responsibilities of actuaries and other stakeholders with respect to the identification or measurement of onerous groups of insurance contracts issued, the sections below provide practical guidance to actuaries on the following:

- Qualitative assessment: facts and circumstances indicating onerous contracts
- Quantitative assessment: calculation of fulfilment cash flows and deriving the LC
- LC reporting

The following decision tree summarizes these steps for each group of contracts:




where:

- FCF denotes fulfilment cash flows; and
- P&L denotes the profit and loss statement, which is referred to as the statement of financial performance under IFRS 17.

It is worth noting that if an insurance contract issued is assessed as onerous, an LC is recognized on the issue date of the contract, or when the contract first becomes onerous. If the entity makes the assessment of onerous contracts for a set of contracts rather than individual contracts, an LC is recognized on the issue date of the first insurance contract in the group, or when the group becomes onerous.

### 5.3.1. Qualitative assessment: Facts and circumstances

As a simplification from the GMA, IFRS 17.18 allows entities applying the PAA to rely on the assumption that no contracts in the portfolio are onerous at initial recognition unless facts and circumstances indicate otherwise.

While a quantitative assessment would only be required when facts and circumstances indicate onerousness, a challenge facing entities applying the PAA is that IFRS 17 does not define "facts and circumstances." Note that onerousness exists when the fulfilment cash flows (FCF) (i.e., including the risk adjustment) are higher than the LRC ex. LC. In broad terms, facts and circumstances can arise from any existing information readily available to management without undue cost or effort. These may include the business plan, pricing strategy, key performance indicators, or other metrics used to track financial results, in addition to facts and circumstances that could arise from external factors such as changes in regulatory rules. A metric such as the combined ratio may be an option to identify onerous contracts. The draft IFRS 17 Application EN in Section 7.14 states that:

> The wording "facts or other circumstances" in this paragraph implies that an explicit test is not required. An explicit test is only needed when there is reason to believe that the portfolio[8] containing the contracts may be onerous. This is clearly a matter of judgement. Possible indicators that may inform the decision to conduct testing include:
>
> a. a group of contracts in the portfolio that are known to be onerous at initial recognition;
>
> b. past losses in the portfolio;
>
> c. aggressive underwriting or pricing;
>
> d. unfavourable experience trends; and
>
> e. unfavourable external conditions.

While most P&C insurance contracts issued have a short coverage period (12 months or less), facts and circumstances could change such that a group of contracts, which are not onerous at inception, subsequently become onerous or vice versa. Such circumstances could include changes in expected losses, discount rates, or risk adjustment. It may be useful for entities to establish clear policies and procedures to capture facts and circumstances that might indicate that a group of insurance contracts issued is onerous. These facts and circumstance would act as triggers for the quantitative assessment of onerous contracts.

The onerous assessment is relevant from when contracts are issued to the beginning of the coverage period (IFRS 17.25) as well as while the contracts are in their coverage period (IFRS 17.57); after the end of the coverage period, changes in claims expectations are reflected within the LIC rather than in the LRC.

[8] Note: while the reference refers to portfolios, the evaluation would be done at the contract level.

### 5.3.2. Quantitative assessment

The facts and circumstances identified as triggers would assist in the identification of groups of insurance contracts issued for which a quantitative assessment is indicated.

The requirements for onerous assessment are described in IFRS 17.57:

> If at any time during the coverage period, facts and circumstances indicate that a group of insurance contracts is onerous, an entity shall calculate the difference between:
>
> (a) the carrying amount of the liability for remaining coverage determined applying paragraph 55; and
>
> (b) the fulfilment cash flows that relate to remaining coverage of the group, applying paragraphs 33–37 and B36–B92. However, if, in applying paragraph 59(b), the entity does not adjust the liability for incurred claims for the time value of money and the effect of financial risk, it shall not include in the fulfilment cash flows any such adjustment.

While the entity would continue to use the PAA for onerous groups of insurance contracts issued (for example, to simplify the financial disclosures), in order to assess the LC the actuary would calculate both the fulfilment cash flows relating to remaining coverage and the PAA LRC ex. LC. For more detail on fulfilment cash flows, refer to Section 4.

An LC exists if the fulfilment cash flows calculated (relating to the remaining coverage) exceed the PAA LRC ex. LC. In such cases, the entity would recognize a loss in the statement of financial performance and increase the LRC by the excess amount.

### 5.3.3. Loss component reporting

If the quantitative assessment confirms the presence of an LC, the entity is required to:

- recognise a loss in the insurance service expense immediately for the net outflow for the onerous group of insurance contracts issued; and
- establish an LC as part of the LRC for the onerous group.

For onerous groups of insurance contracts issued measured using the PAA, the total LRC is equal to the fulfilment cash flows relating to the remaining coverage, which is disclosed as two separate components:

- LRC ex. LC: as described in Sections 5.1 and 5.2
- LC: the remaining part of fulfilment cash flows

At subsequent measurements, the LC is released from the insurance service expense and amortized from the LRC over the duration of the contracts. The LC balance is reduced to zero by the end of the coverage period.

Although under IFRS 17, the LC must be remeasured at each reporting date, several approximations may be reasonable as long as the total LRC is reasonably similar to the fulfilment cash flows over the lifetime of the group of contracts. The approach outlined by IFRS 17.58 implies a full recalculation of the fulfilment cash flows at each reporting date, but one

approximation may be based on a simplified release of the LC. For most groups of contracts, the fulfilment cash flow approach may be more appropriate, due to potential changes in assumptions related to fulfilment cash flows such as seasonality of expected losses, however the simplified LC release approximation could be appropriate for groups of contracts where assumptions related to fulfilment cash flows do not vary significantly from one reporting date to another.

A simplified approximation for determining the LC is compared to the required FCF approach in the following table:

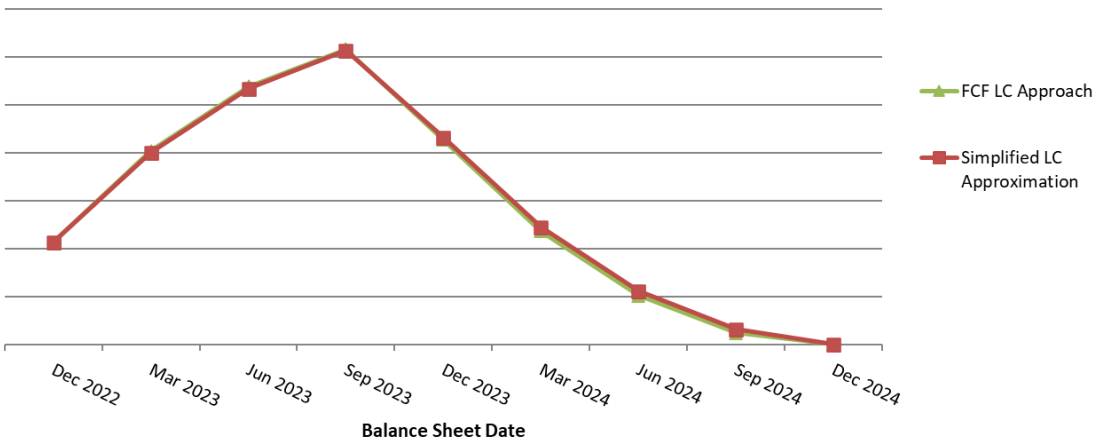
| | **Fulfilment cash flows approach** | **Simplified approximation** |
|---|---|---|
| **Initial recognition** | LC* = GMA fulfilment cash flows relating to remaining coverage – LRC ex. LC | |
| **Subsequent measurement** | Full recalculation of LC at each subsequent measurement:<br>LC* = Fulfilment cash flows relating to remaining coverage (GMA) – LRC ex. LC | No full recalculation of fulfilment cash flows required.<br>LC = LC at initial recognition – Release of LC (see below) and considering the new insurance contracts added to the group and the contracts that leave the group during the period. |
| **Release of LC** | The difference between the LC calculated explicitly at each measurement date which, in turn, depends on earning on coverage and changes in assumptions. | Based on a pre-defined pattern, such as pro-rata to unexpired coverage or expected earning pattern |

*An LC exists if the FCF exceeds the LRC ex. LC.

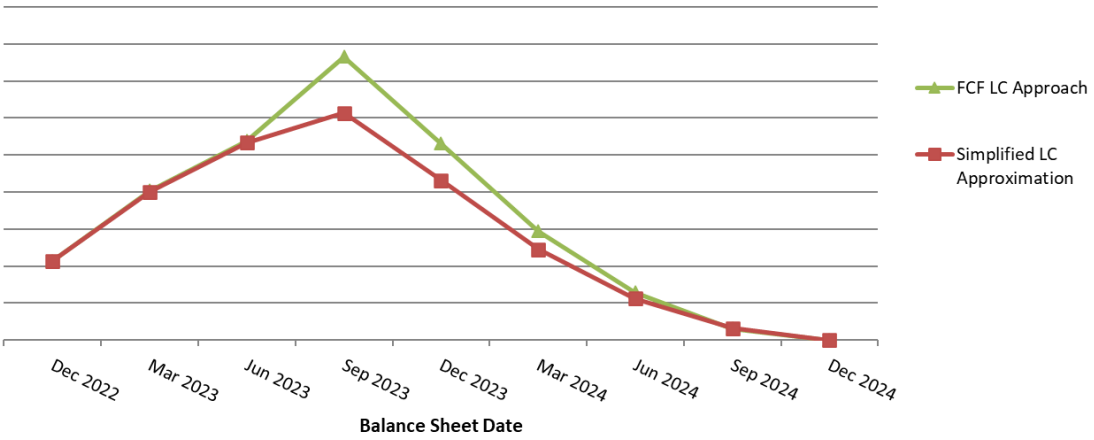
While the required approach and the suggested simplification calculate the fulfilment cash flows at initial recognition of the group of insurance contracts issued, over time they may diverge from each other as the LC is released and as more contracts are added to the group. One way to evaluate the appropriateness of the simplified approximation is to compare how changes in assumptions impact the LC under each approach; then evaluate the likelihood of those changes. Changes in major drivers of the fulfilment cash flow calculations such as the selected expected loss ratios (adjusted to the time period they will be applied to), unearned premiums, discounting, and risk adjustment would need to be evaluated, however other assumptions such as attributable non-acquisition expenses could be assessed as well. Other assumptions, such as changes in premium receiving pattern, will not have a material impact as the impact on fulfilment cash flows will be offset on LRC ex. LC.

For an onerous group of insurance contracts issued in a stable environment, the required approach and the suggested simplification may produce similar LC release patterns with a slight difference related to discounting. The fulfilment cash flows approach more precisely reflects

the unwind/release of the discount associated with past service; in the simplified approximation, the unwind/release of the discount follows the selected pattern. The following graph illustrates the hypothetical LC pattern for a group of insurance contracts issued in a stable environment, under the fulfilment cash flows approach and the simplified approximation; in this example, the group consists of insurance contracts with 12-month duration for which the coverage is earned pro-rata to time.




While in stable environments the simplified approximation may provide a good estimate, the assumptions driving the fulfilment cash flows calculations would need to be tracked to ensure the accuracy of the estimate. The fulfilment cash flows approach recognizes changes in assumptions at each reporting period, however if these changes are not reflected in the simplified approach, the LC associated with the two approaches could diverge. The following graph illustrates a hypothetical situation under which the fulfilment cash flows approach recognizes an increase in the expected loss ratio, however this change is not reflected in the simplified approximation.



To reduce the potential gap between the two approaches, the simplified approximation could reflect the updated assumptions for each new quarter added to the calculations.

The simplified approximation has the advantage of easy implementation and maintenance, and a flexible LC release pattern. However, a weakness of the approach is that it does not consider changes in assumptions during subsequent recognition periods and the method may not be responsive enough in certain circumstances.

On the other hand, the fulfilment cash flows approach has the advantage of being responsive to changes in assumptions at subsequent measurement periods. The total LRC is always equal to the fulfilment cash flows and this approach is considered to be more in line with the GMA LC, however this approach is more complex to maintain.

Under both approaches, the LC at initial recognition, the additional LC incurred as contracts are added to the group, the reversal of the LC, and the adjustments to the LC are booked to insurance service expense. There is no separation of the effect of the LC between the insurance service expense and the insurance finance expense.

### 5.4. Premium

In measuring the LRC ex. LC, two major components related to premium are the premium receipts and allocated insurance revenue[9] (conceptually similar to earned premium). While premium receipts are a fundamental component of the LRC ex. LC, these are often determined by the entity's accounting or IT professionals with limited actuarial involvement. More information around the challenges an entity may face in deriving premium received can be found in Appendix A.

While the PAA measurement is generally based on actual cash flows, revenue recognition (earned premium) is based on the passage of time, unless the pattern of release of risk differs significantly from the passage of time. If it does, then revenue is recognized based on the expected timing of incurred insurance service expenses (IFRS 17.B126). This implies a two-step process for determining whether revenue is recognized pro rata to time, or as a function of a seasonal pattern:

- If the pattern of release of risk (i.e., incurred losses and loss adjustment expenses) is uniform, then the revenue would be earned pro rata to time.
- If the pattern of release of risk is not uniform, then the revenue would be earned based on the pattern of expected insurance service expenses (i.e., incurred losses and loss adjustment expenses, as well as other insurance service expenses).

While IFRS 17 does not prescribe the responsibilities of the actuary with respect to insurance revenue, the analysis needed to evaluate the revenue recognition pattern may be seen as more actuarial in nature as it requires the estimation of expected losses and associated expenses and the estimation of their timing. The IFRS 17 Application EN discusses revenue recognition in paragraph 7.12:

[9] The portion of the IFRS 17 insurance revenue (i.e., the revenue for insurance contract services provided in the period) associated with the premium.

In practice, unless there are particular reasons to expect an uneven pattern, a good starting point might be an a priori pro-rata assumption, modified to the extent demanded by credible experience. There is an inherent tension between using the largest possible portfolio to maximise credibility and smaller sub-portfolios to detect intra-portfolio variations. The best balance is a matter of judgement.

There is also the question of what does "*differs significantly from the passage of time*" mean? This is not defined by the standard although the term "significant" is often used in accounting frameworks to relate that something has more than a remote likelihood of causing a misstatement. This appears to be a lower threshold than something that is material, an item in accounting that would have an impact on the reader of the financial statement.

For short-duration contracts, the actuary will need to use judgment in assessing whether adjustments to uniform earning patterns are required. Many short-duration contracts may be exposed to seasonality due to considerations such as weather, catastrophe events or geography for example. However, these may not materially change the expected earning pattern of the group. Other short-duration contracts may cover cyclical risks, such as leisure and lifestyle products (e.g., snowmobiles, recreational vehicles); while these products may have a clear non-uniform earning pattern, an adjustment may not be required when product diversification evens the earning pattern.

In evaluating the earning pattern for multi-year policies, the actuary may find it useful to consider pricing studies to obtain assumptions around the expected timing of losses. There may be some products, such as warranty, where the expected losses are not uniform throughout the coverage period and an uneven earning pattern to calculate the insurance revenue may be needed.

**5.5. Acquisition costs**

Acquisition cash flows are also considered more accounting in nature and actuaries would need to work with their finance counterparts on these issues. Only costs that are directly attributable to the portfolio of insurance contracts to which the group belongs are included in the measurement of the liability. Other costs that do not meet this requirement will be accounted for outside of insurance service results on the financial statements as "other expenses."

The measurement and recognition of acquisition cash flows is applied differently under the PAA, when compared to the GMA. Under the PAA, an entity may elect the option to recognize acquisition cash flows as expenses when it incurs those costs, as long as the coverage period of each contract in the group at initial recognition is no more than one year as described in IFRS 17.59(a).

Under the 59(a) election, acquisition expenses incurred prior to or at initial recognition of a contract would be excluded from the assessment of whether the contract is onerous. The 59(a) election therefore reduces the likelihood of onerous contract classifications; however, it does front-end the recognition of expenses.

If the acquisition cash flows are not recognized as expenses when incurred, the standard requires acquisition costs attributable to future groups of insurance contracts (i.e., groups that are not recognized yet) to be deferred under IFRS 17.28B-28C. These acquisition costs related to future contracts are not part of the LRC.

More details on acquisition expenses are available in the draft report on IFRS 17 Expenses for Property & Casualty and Life & Health Insurance.

### 5.6. Financing and investment components

#### 5.6.1. Significant financing component

One of the simplifications of the PAA is that there is no requirement to reflect the time value of money on the LRC unless there is a significant financing component. IFRS 17.56 outlines that an adjustment for significant financing component is not required when, at initial recognition, the expected time between providing each part of the service and the related premium due date is no more than one year. This is further confirmed by the Basis of Conclusion IFRS 17.BC292(a) which states that, "when the period between premiums being due and the provision of service is one year or less, the group is deemed not to have a significant financing component."

Where the expected time between premium receipts and providing that portion of the service is over one year, the entity may need to provide evidence that the associated financing component is not material if it chooses not to reflect it in the LRC. The notion of significant financing component is beyond the scope of this draft educational note. It is covered in IFRS 15.60–61, which can be a source for more detailed information. IFRS 15.61 states, "The objective when adjusting the promised amount of consideration for a significant financing component is for an entity to recognise revenue at an amount that reflects the price that a customer would have paid for the promised goods or services if the customer had paid cash for those goods or services when (or as) they transfer to the customer (ie the cash selling price)…"

For groups where a significant financing component exists, the financing component would reflect the time value of money associated with the mismatch in the timing of premium receipts and the service provided for that portion of the policy at each measurement date.

There are different circumstances under which a significant financing component can arise. For example, it can occur as a result of premium receipts at least a year prior to service being provided; another example is that it occurs as a result of premium receipts at least a year after the service has been provided. In the first case, the transaction benefits the entity as the policy-holder finances the entity's activities by the pre-payment of the premium; in the second case, the transaction benefits the policy-holder as in this scenario the entity finances the service (premium is due after service has been provided). This draft educational note focuses on the first scenario, as the second scenario is not generally found in P&C contracts.

For a group of contracts where premium is received prior to that portion of the service being provided, interest would accrue on the portion of the premium associated with the remaining service. The interest rate used would be consistent with the IFRS 17 discount rates as determined at initial recognition. More detailed guidance around the discount rates can be found in the PCFRC Discounting EN.

The financing component would form part of the LRC and would be earned over time as insurance revenue proportional to the service provided, per IFRS 17.B120. While the standard does not prescribe the exact calculation to accumulate and release the financing component, the following illustrative example presents one possible approach:

| | |
|---|---|
| Acquisition cost | 0 |
| Premium received | Effective date |
| Policy term (yrs) | 3 |
| Discount rate at initial recognition ( R ) | 2% |
| Premium earned pro rata | |
| Contract is not onerous | |

| | Opening LRC | Premium received | Insurance finance expense | Insurance revenue "financing component" | Insurance revenue "premium" | Insurance revenue | LRC balance |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | prior (7) | (a) | (b) | (c) | (a) | (4)+(5) | (1)+(3)+(6) |
| **Initial recognition** | - | 3 000 | - | - | - | - | **3 000** |
| **YR1** | 3 000 | | 60 | (20) | (1 000) | (1 020) | **2 040** |
| **YR2** | 2 040 | | 41 | (40) | (1 000) | (1 040) | **1 040** |
| **YR3** | 1 040 | | 21 | (61) | (1 000) | (1 061) | **-** |

(a) Given

(b)=(Opening LRC)*R

(c)=(Sum of Insurance finance expense - Sum of prior Insurance revenue "financing component") x % of remaining service provided in period

At each reporting period, the financing component is calculated on the future service portion of premium receipts (and the future service portion of the financing component recognized in prior periods). As a result, it may not be necessary to track the actual timing between the premium receipts and the portion of the service provided. Consideration may also be given to acquisition expenses that are paid at the same time or before premium is received; such expenses would reduce the base of the financing component calculations. Actuaries are encouraged to consult with their accounting counterparts on this issue.

### 5.6.2. Investment component

The standard defines investment component as, “The amounts that an insurance contract requires the entity to repay to a policyholder in all circumstances, regardless of whether an insured event occurs.”

P&C insurance contracts issued do not typically include investment components, therefore this component of the LRC ex. LC is not discussed in this draft educational note. Specific considerations for P&C reinsurance contracts are provided in Section 6.6.

**Summary comparison of the GMA and PAA LRC**

The following table summarizes key differences between the LRC as measured under the GMA and the PAA:

| **Area** | **GMA** | **PAA** |
|---|---|---|
| Application | All P&C contracts | All P&C contracts with a coverage period of one year or less are eligible for PAA; PAA eligibility must be tested for contracts of longer duration |
| Initial measurement | Present value of cash flows + Risk adjustment + CSM | If not onerous, premiums received less initial acquisition costs unless acquisitions costs are recognized as expenses as incurred<br>If onerous, present value of cash flows plus risk adjustment |
| Cash flow projections | Yes | No, unless the contract is onerous |
| Risk adjustment | Yes | No, unless the contract is onerous |
| CSM | Yes (if the contract is issued and is not onerous) | No |
| Loss component | Yes, if onerous | Yes, if onerous |
| Option to immediately recognize acquisition costs | No | Yes, if the coverage period of all contracts in the group is one year or less |
| Revenue | Is comprised of expected claims and other expected insurance service expenses, release of risk adjustment and release of CSM (based on coverage units) | Pro rata to time or the timing of insurance service expenses |
| Onerous contract test at initial recognition | A quantification is always required | A quantitative test is performed if indicated by a qualitative assessment (facts and circumstances) |

## 6. Considerations for reinsurance contracts issued and held

This section supplements the PCFRC Reinsurance EN and Chapter 9 of the IFRS 17 Application EN.

The concepts which are analogous to the LRC and LC for insurance/reinsurance contracts issued are termed asset for remaining coverage (ARC) and loss-recovery component for reinsurance contracts held.

### 6.1. Grouping of reinsurance contracts held

Section 2 of the PCFRC Reinsurance EN provides considerations for the grouping of reinsurance contracts held. The grouping of reinsurance contracts held may be different than the grouping of the corresponding underlying contracts; in such cases, the actuary would apply a systematic and rational methodology to determine the reinsurance applicable to underlying insurance contract groups.

### 6.2. Recognition of Reinsurance Contracts Held

IFRS 17.62 states that the entity recognizes a group of reinsurance contracts held from the earlier of:

- The beginning of the coverage period of the group of reinsurance contracts held; and
- The date the entity recognizes an onerous group of underlying insurance contracts, if the entity entered into the related reinsurance contract held in the group of reinsurance contacts at or before that date.

IFRS 17.62A states an additional consideration for reinsurance contracts held that provide proportionate coverage, "… an entity shall delay the recognition of a group of reinsurance contracts held that provide proportionate coverage until the date that any underlying insurance contract is initially recognized, if that date is later than the beginning of the coverage period of the group of reinsurance contracts held."

The following table summarizes the recognition of the underlying insurance contracts as well as the corresponding reinsurance contracts covering them:

| **Situation** | | **Recognition in financial statements** | |
|---|---|---|---|
| **Underlying insurance contracts** | **Corresponding reinsurance contracts held** | **Underlying insurance contracts** | **Corresponding reinsurance contracts held** |
| Issued and not onerous, but before the coverage period begins | Reinsurance contract held is entered into | No | No |
| | Reinsurance contract held is not entered into | No | No |
| Issued and onerous, but before the coverage period begins | Reinsurance contract held is entered into | Yes | Yes |
| | Reinsurance contract held is not entered into | Yes | No |
| In force | Reinsurance contract held is in effect | Yes | Yes |
| | Reinsurance contract held is not in effect | Yes | No |

IFRS 17 does not define what constitutes "entering into" a reinsurance contract held. However, it is generally understood that a contract has been entered into when it is binding on both parties to the contract. As a result, the contract may be entered into before coverage begins. For example, obtaining signed lines on a reinsurance contract held may constitute entering into the reinsurance contract held.

It is worth mentioning that the recognition of reinsurance contracts under IFRS 17 differs from the recognition of reinsurance contracts under the IFRS 4 premium liabilities calculation, in which the actuary is required to estimate the expected net cost of any reinsurance for contracts expected to apply to underlying contracts that have been issued (but where the reinsurance may, or may not, have been entered into at the valuation date). Under IFRS 17, only the reinsurance treaties entered into are reflected, but all cash flows related to all underlying contracts expected to attach within the contract boundary under these treaties, including underlying contracts that have not yet been issued, are used in the valuation The ability of the entity to reassess and reprice risks would also be considered.

### 6.3. Boundary of reinsurance contracts issued and held

The reader is referred to Sections 5.2.3 and 5.2.4 of the PCFRC Reinsurance EN for guidance on determining the contract boundary and coverage period for reinsurance contracts issued or held.

Question 9.12 of the IFRS 17 Application EN specifically addresses considerations when a reinsurance contract held covers multiple years of underlying insurance contracts or attachments.

The implications are summarized in Section 5.3.2 of the PCFRC Reinsurance EN, "When estimating the [ARC] for reinsurance contracts held valued under the GMA, the ceding company would include all projected cash flows, including those related to underlying contracts that have not yet been issued, unless the reinsurance contract includes unilateral cancellation conditions."

Example 3 in Appendix A of the IASB's September 2018 TRG paper AP05[10], prepared by IASB staff for the TRG meeting discussion, illustrates the accounting treatment of a 24-month proportional reinsurance contract issued and recognized on January 1 that includes a three-month unilateral notice period to both the entity and the reinsurer with respect to new business reinsured. At initial recognition, the cash flows that must be considered within the contract boundary are those arising from underlying contracts expected to be issued and ceded within the three-month period (i.e., by March 31). As at the reporting date of March 31, the cash flows related to underlying contracts that are expected to be issued and ceded in the next three-month period are outside the existing contract boundary and related to future reinsurance contracts held. The contract boundary is determined at the date of initial recognition; in this example, a new reinsurance contract, recognized on April 1, will reflect coverage on the underlying contracts issued and reinsured from April 1 to June 30.

If, for example, the above reinsurance contract included a six-month unilateral notice period instead of a three-month notice period, at the reporting date of March 31, the reinsurance cash flows for the period from April 1 to June 30 would have to be projected as long as the cedant has the substantive right to receive services or to pay reinsurance premiums. The substantive right to receive services would end if the reinsurer has the practical ability to reprice the reinsurance premiums for existing cessions and the substantive obligation to pay reinsurance premiums ends if the cedant has the practical ability to recapture the existing cessions. Note that "practical ability" differs from legal right and takes into consideration facts and circumstances that might prevent the cedant from taking action such as fees or penalties, the need for reinsurance, and the availability of reinsurance in the market.

### 6.4. Risk of non-performance for reinsurance contracts held

When estimating the LRC under the GMA, the actuary would determine a probability-weighted provision to account for the risk of non-performance of the reinsurer, including consideration for reinsurance default, coverage dispute, and other risk of non-performance. The risk of non-performance may vary by reinsurer and based on the collateral available to mitigate the risk of non-performance. Considerations for estimating the risk of non-performance are described in Section 3.2 of the PCFRC Reinsurance EN.

[10] IFRS Foundation, 'Cash flows that are outside the contract boundary at initial recognition', https://www.ifrs.org/-/media/feature/meetings/2018/september/trg-insurance/ap05.pdf, (accessed 19 March 2021).

IFRS 17.63 states: "… In addition, the entity shall include in the estimates of the **present value of the future cash flows** [emphasis added] for the group of reinsurance contracts held the effect of any risk of non-performance by the issuer of the reinsurance contract, including the effects of collateral and losses from disputes."

The risk of non-performance would be included in the measurement of the estimates of future cash flows (i.e., undiscounted basis) for reinsurance contracts held, although IFRS 17.63 does allow for the risk of non-performance to be reflected in discount rates.

The risk of reinsurance non-performance includes both the risk of default and disputes. In determining the adjustment for the risk of reinsurance non-performance, the actuary would consider the financial strength of reinsurers, any concentration risk as well as the length of time over which the liabilities are expected to be settled.

IFRS 17.67 states that "changes in the fulfilment cash flows that result from changes in the risk of non-performance by the issuer of a reinsurance contract held do not relate to future service" and do not adjust the CSM.

### 6.5. CSM and loss-recovery component

#### 6.5.1. CSM excluding loss recovery component

For insurance contracts and reinsurance contracts issued, the CSM represents the unearned profit that the entity will recognize as it provides insurance contract services in the future. For reinsurance contracts held, the concept of CSM is modified to recognize that for a group of reinsurance contracts held there is no unearned profit but instead a net cost or net gain on purchasing the reinsurance.

The CSM for reinsurance contracts held, excluding the loss-recovery component, is determined in the same manner as for insurance contracts issued (see Section 4.6), but the CSM can be positive or negative thereby deferring initial losses as well as initial gains. If the amount paid for reinsurance is greater than the inflows expected from the reinsurer plus the risk adjustment, this represents a net cost of purchasing reinsurance and the resulting CSM is booked in an asset position. In the rare case that there is a net gain from purchasing reinsurance, the resulting CSM is negative and is booked in a liability position.

#### 6.5.2. Coverage units

The guidance on coverage units provided in Section 4.7 applies broadly to reinsurance contracts issued and held; coverage units are calculated consistently with the amounts of insurance contract services provided by the contracts and consider both additions and cancellations of underlying contracts.

For reinsurance contracts that require the reinsurer to indemnify the reinsured for losses incurred during the reinsurance contract period (loss-occurring contracts), the coverage unit pattern would typically be uniform, assuming that no significant growth or cancellations are expected.

For reinsurance contracts that cover reinsured losses on policies incepting during the contract period (risk-attaching contracts), the coverage unit pattern would typically be rising to reflect the policies attaching under the contract, and then declining as the underlying policies expire.

Theoretically, the coverage units would be determined based on the expected underlying units in force at various points in time, as this reflects the quantity of insurance contract services available. Using individual underlying policy limits to estimate coverage units is a reasonable approach however, one key practical issue is data availability if policy limits are not readily available. Alternatives may include:

- coverage units based on the number of underlying contracts in force, if the underlying risks are homogeneous (similar coverage limits); and
- coverage units based on premium earning pattern, if premiums are expected to be proportional to the quantity of benefits provided, are not receivable in different periods to the insurance services, and do not reflect different probabilities of claims for the same insured event in different periods rather than different levels of stand-ready service.

If using policy limits to estimate coverage units, the actuary would consider adjustments if there are significantly skewed underlying limits (e.g., high-limit underlying policies written at the beginning of the reinsurance contract period and low-limit underlying policies written at the end of the reinsurance contract period).

When the reinsurance contract covers multiple lines of business with varying limits for the underlying risks, basing coverage units on the premium earning pattern may be a practical approximation.

There are several potential approaches to determining the coverage units for an adverse development cover contract. The coverage unit pattern would generally be declining over time. When the adverse development cover has a claim limit, approaches[11] for determining the quantity of benefits may include:

- comparing the contractual maximum amount that can be claimed in each period with the remaining contractual maximum amount that can be claimed as a constant amount for each future coverage period; and
- comparing the expected amount of underlying claims covered in the period with the expected amount of underlying claims remaining to be covered in future periods. This method may not work when the underlying reserves are set at expected value and there is no adverse development on the reinsurance contract on an expected basis.

When the adverse development cover does not have a claim limit, approaches[12] for determining the quantity of benefits may include the following:

- Determining the coverage units based on the expected amount of underlying claims covered in the period with the expected amount of underlying claims remaining to be covered in future periods (i.e., expected pattern of release of underlying losses). For example:

[11] These approaches are also mentioned in Agenda Paper 05, Example 8 of the May 2018 TRG meeting.
[12] These approaches are also mentioned in Agenda Paper 05, Example 9 of the May 2018 TRG meeting.

| Accident year | Claims expected to be settled in | | | | | Total |
|---|---|---|---|---|---|---|
| | Year +1 | Year + 2 | Year + 3 | Year + 4 | Year + 5 | |
| Year – 4 | 177,000 | 0 | 0 | 0 | 0 | 177,000 |
| Year – 3 | 391,000 | 391,000 | 0 | 0 | 0 | 782,000 |
| Year – 2 | 419,000 | 210,000 | 210,000 | 0 | 0 | 839,000 |
| Year – 1 | 399,000 | 399,000 | 200,000 | 200,000 | 0 | 1,198,000 |
| Year | 1,978,000 | 1,319,000 | 1,319,000 | 659,000 | 659,000 | 5,934,000 |
| **Total** | **3,364,000** | **2,319,000** | **1,729,000** | **859,000** | **659,000** | **8,930,000** |
| **Coverage units** | **37.7%** | **26.0%** | **19.4%** | **9.6%** | **7.4%** | **100.0%** |

- Determining the coverage units based on an equal weight during the length of the settlement of underlying liabilities. This approach is based on the rationale that the entity would stand ready to pay for claims over the lifetime of the claims run-off. For this reason, it may be reasonable to use the expected settlement period of the claims to determine the length of time over which to amortize the coverage units.

  The nature of the claims covered, and its effect on the length and uncertainty of the settlement period, would be considered. For example, the actuary may separate the claims covered by the adverse development contract into:

  - groups of claims expected to be settled over one year;
  - groups of claims expected to be settled over two years;
  - groups of claims expected to be settled over three years; and so on.

  Coverage units for the entire adverse development contract would then be weighted based on a systematic approach, such as the underlying liabilities. For example:

| Accident year | Coverage units | | | | | Underlying liabilities |
|---|---|---|---|---|---|---|
| | Year +1 | Year + 2 | Year + 3 | Year + 4 | Year + 5 | |
| Year – 4 | 100% | 0% | 0% | 0% | 0% | 177,000 |
| Year – 3 | 50% | 50% | 0% | 0% | 0% | 782,000 |
| Year – 2 | 33% | 33% | 33% | 0% | 0% | 839,000 |
| Year – 1 | 25% | 25% | 25% | 25% | 0% | 1,198,000 |
| Year | 20% | 20% | 20% | 20% | 20% | 5,934,000 |
| **Total** | | | | | | **8,930,000** |
| **Coverage units** | **26.1%** | **24.2%** | **19.8%** | **16.6%** | **13.3%** | **100.0%** |

### 6.5.3. Loss-recovery component

When an entity recognizes a LC on a group of underlying insurance contracts and these underlying contracts are covered by reinsurance contracts held (see table in Section 6.2), a portion of the LC is offset by a gain on reinsurance contracts held. This offset is called a loss-recovery component and is recorded as part of the ARC for reinsurance contracts held:

- when the reinsurance contracts held are measured using the GMA, the loss-recovery component adjusts the CSM of reinsurance contracts held; and

- when the reinsurance contracts held are measured using the PAA, the loss-recovery component adjusts the carrying amount of the ARC instead of adjusting the CSM.

Based on IFRS 17.B119D, the loss-recovery component is determined by multiplying:

- the loss recognized on the underlying insurance contracts (i.e., the LC); and
- the percentage of claims on the underlying insurance contracts the entity expects to recover from the group of reinsurance contracts held.

This calculation only applies at initial recognition or when the direct group first becomes onerous per IFRS 17.66A. Further, IFRS 17.B119E allows an entity to include in an onerous group of insurance contracts both onerous insurance contracts covered by reinsurance and onerous contracts not covered by reinsurance. In such cases, the entity would apply a systematic and rational method of allocation to determine the portion of the LC that relates to insurance contracts covered by reinsurance.

IFRS 17.B119F notes that after an entity has established a loss-recovery component, the loss-recovery component would be adjusted to reflect changes in the loss component of the underlying insurance contracts. The carrying amount of the loss-recovery component would not be greater than the portion of the carrying amount of the loss component of the underlying insurance contracts that the entity expects to recover from the group of reinsurance contracts held.

An important implication of the approach prescribed in IFRS 17 is that the establishment of a loss recovery component does not depend on whether entering into the reinsurance agreement results in a net gain or a net loss. In both instances, the loss-recovery component would be identical.

Inversely, when an entity is “worse off” by purchasing reinsurance, the entity is still required to record a loss-recovery component to offset the loss on the underlying direct contracts based on the percentage of claims expected to be recovered.

The approach prescribed in IFRS 17 is generally consistent with the concept of proportionate reinsurance, where financial cash flows (e.g., premiums, claims, acquisition expenses) are proportional. Under these circumstances, it follows that the reinsurance effect on the LC would also be proportional to the claims recovered.

This is not necessarily the case for non-proportionate reinsurance, where the percentage of expected claims to be recovered may not be proportional to other cash flows such as premiums and maintenance expenses. Nevertheless, IFRS 17 requires the use of the percentage of expected claims approach and the actuary would not calculate a loss-recovery component directly based on the fulfilment cash flows of the reinsurance contracts.

IFRS 17 does not prescribe a specific approach for determining the percentage of expected claims to be recovered, and therefore the actuary would use judgment in determining this assumption. The following is one approach which is thought to be consistent with the requirements of IFRS 17.

The actuary may consider the expected emergence pattern of incurred losses and loss adjusting expenses, but not other sources cash flows such as premiums and expenses. These losses may

reflect the time value of money, consistent with the discount rates used to determine the LRC and would exclude the risk adjustment. The payment patterns, discount rates and risk adjustments may vary for the underlying contracts and the corresponding reinsurance contracts. Finally, the expected claims to be recovered may consider the risk of non-performance of the reinsurer.

Similarly, as described for the release the LC for groups measured under the PAA (see Section 5.3.3), the actuary may use a simplified approach to determine the percentage of claims to be recovered when the percentage is not expected to change materially from one reporting date to another.

### 6.6. Investment components

Section 4 of the PCFRC Reinsurance EN provides guidance on investment components. Investment components are included in the LRC or ARC however the insurance revenue and insurance service expenses presented in profit or loss exclude any investment components.

## 7. Illustrative example – Loss component calculation

The LC is evaluated based on an analysis of the fulfilment cash flows. For groups of contracts that are onerous and measured under the PAA approach, the LC is calculated at each evaluation date by comparing the fulfilment cash flows to the LRC ex. LC as measured under the PAA approach. An example provided in Appendices A and B illustrates the estimation of the LC.

The initial step of the LC calculation included in the Appendices is determining the appropriate direct unearned premium (UPR) for each group of contracts that facts and circumstances indicate may be onerous. The illustrative example presents two categories of UPR for each potential onerous group:

- The UPR at the date of evaluation for contracts for which the coverage period has begun on or before the evaluation date.
- The UPR[13], equivalent to expected written premium, for contracts that have been issued but the coverage period has not yet begun at the date of evaluation.

In the example, the resulting UPR is adjusted for expected cancellations over the remaining coverage period of the insurance contracts.

The largest component of the fulfilment cash flows relates to future claims and loss adjustment expenses which are estimated by applying a selected ELR and an unallocated loss adjustment expense (ULAE) factor to the UPR by contract group. The expected losses and adjustment expenses are then discounted to the evaluation date by multiplying by a discount factor, as illustrated in Appendix B, sheet 1, based on the selected discount curve and average accident date of the UPR. The calculation of the average accident date will vary at each subsequent evaluation date as the calendar year cohort matures.

[13] This is not UPR in the traditional sense as the premium has not yet been "written" because the contracts are not yet effective.

Premiums that are receivable, such as installment premiums, will need to be discounted based on the expected premium payment pattern for each particular group. An example showing how the discounted premium factor is calculated is provided in Appendix B, sheet 2.

The calculation of the LC is continued in Appendix A, sheet 2, by applying the risk adjustment, the acquisition costs, and the other attributable expenses to the discounted losses and loss adjustment expenses. Although the illustrated example presents risk adjustment as a proportion of discounted losses and ULAE, IFRS 17 does not prescribe this particular risk adjustment methodology. For example, the risk adjustment may be determined as a proportion of profit margin and/or may be undiscounted. Groups of contracts that have been issued but are not yet effective need to include future acquisition costs in the calculation of the fulfilment cash flows while groups of contracts that are currently in force need to include the fixed deferred acquisition expenses and the variable deferred acquisition net of cancellation in the calculation of the fulfilment cash flows. A loading for attributable expenses should also be included in the fulfilment cash flows.

The final step is to compare the fulfilment cash flows to the PAA LRC (premium received net of earned premium less deferred acquisition expenses) to determine the LC.

The fulfilment cash flows, including the losses, loss adjustment expenses, attributable expenses, and risk adjustment should be calculated on a present value basis. With regard to the time value of money, the cash flows associated with deferred acquisition expenses would also be considered but are not generally material to the calculation of the fulfilment cash flows.

**Calculation of the average accident date**

For a given business segment, the payment pattern for discounting the claims and adjustment expenses underlying the period for remaining coverage would normally be consistent with that used for the LIC. The future accident period payment patterns of the LIC would typically be selected and applied on an accident year basis and discounted to the valuation date. However, as presented in the illustrative example, an adjustment would be required to reflect the average accident date (AAD) underlying the period for remaining coverage.

For example, assuming premium writings occur uniformly in a calendar year and the corresponding losses are also incurred uniformly throughout the year, the mean earning date and the mean accident date of a future accident year occurs at 0.50 years or halfway through the year. For the expected losses underlying a group's period of unexpired coverage, the AAD involves calculating a weighted average or mean of the future accident dates using declining exposures as weights.

As an example, consider a group that consists of one-year policies written uniformly through the year (from January 1 to December 31) with a valuation date of December 31:

> Let $x$ = future accident date underlying the unexpired coverage relating to 12-month policies
>
> Let $f(x)$ = the loss exposure earned on a given future accident date
>
> $= 1 - x$; where $0 \leq x \leq 1$

And x = 0 is the valuation date and x = 1 is one year later (assuming annual policies) i.e., the last date the loss exposure exists.

Let the average accident (or earned) date equal integrating over the values 0 through 1, divided by the sum of the probability.

$$= \frac{\int_0^1 x\, f(x)dx}{\int_0^1 f(x)dx} = \frac{1}{3}\,\text{year}$$

Thus, the AAD of the unexpired coverage for the group can be calculated as one-third of a year or four months (May 1).

The AAD of a particular group will vary based on the valuation date (e.g., December 31, March 31). Additionally, the AAD of groups that are onerous, but not yet effective, must be calculated separately.

The following table provides the results of the AAD calculation for a sample of groups for which *x*=0 (December 31, Year 1). The column labelled Group 1 provides the formula for the group of 12-month policies described above and, in the Appendix, corresponds to the area of the parallelogram, as at December 31, 2023, shaded in orange. Group 2 is the same group as Group 1 but valued six months later as at June 30, 2023; in the Appendix, Group 2 corresponds to the area of the June 30, 2023 parallelogram shaded in orange. Group 3 is not illustrated in the Appendix but provides the AAD formula for a group of six-month policies. Group 4 consists of onerous policies that are issued two months in advance of their effective date; in the Appendix, Group 4 is shaded in blue.

| | Group 1 | Group 2 | Group 3 | Group 4 |
|---|---|---|---|---|
| Policy duration | 12 months | 12 months | 6 months | 12 months |
| Classification | Not onerous | Not onerous | Not onerous | Onerous |
| Issue dates | Jan 1 to Dec 31, Year 1 | Jan 1 to Dec 31, Year 1 | Jul 1 to Dec 31, Year 1 | Nov 1 to Dec 31, Year 1 |
| Effective dates | Jan 1 to Dec 31, Year 1 | Jan 1 to Dec 31, Year 1 | Jul 1 to Dec 31, Year 1 | Jan 1 to Feb 28, Year 2 |
| Valuation date | Dec 31, Year 1 | Jun 30, Year 2 | Dec 31, Year 1 | Dec 31, Year 1 |
| *f(x)* | *1-x* | *1-x* | *0.5 - x* | $\begin{cases} x, & 0 \le x < \frac{2}{12} \\ \frac{2}{12}, & \frac{2}{12} \le x < 1 \\ \frac{14}{12} - x, & 1 \le x \le \frac{14}{12} \end{cases}$ |
| AAD formula | $\frac{\int_0^1 x\, f(x)dx}{\int_0^1 f(x)dx}$ | $\frac{\int_{0.5}^1 x\, f(x)dx}{\int_{0.5}^1 f(x)dx}$ | $\frac{\int_0^{0.5} x\, f(x)dx}{\int_0^{0.5} f(x)dx}$ | $\frac{\int_0^{14/12} x\, f(x)dx}{\int_0^{14/12} f(x)dx}$ |
| AAD result | 0.3333 | 0.6667 | 0.1667 | 0.5833 |
| AAD at valuation date | 0.3333 | 0.1667 | 0.1667 | 0.5833 |
| AAD date | May 1, Year 2 | Sep 1, Year 2 | Mar 1, Year 2 | Aug 1, Year 2 |

## 8. MCT considerations

### 8.1. Introduction

The Office of the Superintendent of Financial Institutions Canada, l'Autorité des marchés financiers, and other provincial regulatory authorities have indicated their intention to adapt

the insurance capital guidelines (Minimum Capital Test or MCT Guidelines) applicable to P&C entities effective with the implementation of IFRS 17. The expected loss ratio (ELR) is used in the derivation of the insurance risk margin for unexpired coverage (as described in the MCT guideline) for P&C entities using the PAA to determine their LRC for a given group of insurance contracts. For P&C entities using the GMA to determine their LRC for a given group of insurance contracts, the applicable insurance risk margin for unexpired coverage is derived directly from the estimate of LRC reflected in the financial statements, and an explicit estimate of the ELR is not required for MCT purposes.

### 8.2. Expected loss ratios for MCT

The expected loss ratio for MCT is a best estimate of the future ELR that is applied to the estimated revenue for the remaining coverage period. As used in this draft educational note, the "remaining coverage period" refers to the period during which remaining amounts of acquisition cash flows and premiums receivable are to be brought into revenue. In deriving the ELR for MCT, the actuary would consider the revenue basis to which it is applied (e.g., insurance revenue on a basis consistent with the statement of profit or loss), including consideration of whether the business is direct, reinsurance issued, or reinsurance held. The ELR would encompass expected future losses and expected future loss adjustment expenses. The ELR would reflect the time value of money, in accordance with IFRS 17, but it would not include the risk adjustment.

Sections 8.3 and 8.4 separately address expected future losses and expected future loss adjustment expenses.

Many evaluation methods may be used to derive the ELRs for MCT, depending on the complexity of the business segments and characteristics of the entity. For example, the projected ELRs may be based on the actuary's valuation of LIC, on the entity's plan (or budget), on the results of a ratemaking analysis, or on an ad hoc analysis, as considered appropriate.

The determination of ELRs for MCT is generally undertaken using a business segmentation that is consistent with the analysis of LIC, or whatever analysis is used as the basis for determining the ELR. To facilitate the MCT calculations, the actuary may use a business segmentation that produces estimated future costs that can be aggregated to the annual return class of insurance level.

### 8.3. Expected losses

Generally, future expected losses are based on the actuary's evaluation of the entity's recent experience, consistent with the valuation of LIC, adjusted to the remaining coverage period. Section 4.3 provides examples of adjustments to historical experience that may apply.

The actuary would consider the revenue recognition pattern underlying the LRC and select assumptions accordingly. Seasonality adjustments to the indicated future expected losses may need to be applied if the claims occurrence pattern is not uniform throughout the remaining coverage period (e.g., seasonal occurrences of hurricanes). Depending on the line of business, the seasonality adjustment may not be significant. For some portfolios (e.g., property catastrophe treaty reinsurance), however, seasonality may be a meaningful consideration.

The future expected losses may also include adjustment for policy term assumptions considering the term of the policy and the future period covered by the remaining coverage period. For example, for policies with a term longer than 12 months (such as warranties or multi-year contracts, if eligible for PAA), assumptions for the ELR would consider trends that are expected over the remaining term of these policies.

**8.4. Loss adjustment expenses and other directly attributable costs**

In selecting an ELR, the actuary would consider loss adjustment expenses directly attributable to claims.

If historical losses include allocated loss adjustment expenses (ALAE), the actuary may choose to include ALAE in the estimate of the expected future losses. Alternatively, an estimate of future ALAE may be derived by the actuary based on considerations similar to those applied to the estimate of expected losses, and generally consistent with the actuary's valuation of LIC.

Similarly, the actuary may choose to include unallocated loss adjustment expenses (ULAE) in the estimate of expected future losses. If ULAE is not included with losses, the actuary would derive an estimate of future ULAE on a suitable basis, and generally consistent with the actuary's valuation of LIC. A typical calculation is to apply a ULAE ratio based on historical experience reflecting any expected changes in claims practices to the expected losses. To facilitate the MCT calculations, the actuary may wish to consider the extent to which ALAE ratios and ULAE ratios might vary by annual return class of insurance.

Directly attributable costs not otherwise included as ALAE or ULAE above may be included in the derivation of the ELR for MCT purposes. If not encompassed by the ELR, such costs would be identified as additional costs to be added for MCT purposes.

## Appendix 1 – Premium received

One of the main components of LRC under PAA is premium received, which can be derived as total expected premium receipts[14] less premiums receivable for the group of contracts. These balances are currently available under IFRS 4, however they may not be available at the appropriate level of granularity.

While the total expected premium receipts are usually available at the required granularity, actual cash flows for premiums received (or changes in premium receivable) can be operationally complex to obtain for many entities, as most financial reporting systems are not connected to billing and other systems processing actual cash transactions; in addition, cash transactions may be booked to financial data at a higher level of aggregation than groups of contracts.

If the entity is not able to track the actual premiums received (or premium receivable balances) at the required level of granularity without undue cost or effort, actuarial insight may be required to estimate these amounts. The use of allocations is specifically permitted under IFRS 17.24. The actuary may want to confirm with their finance counterparts and auditors that allocations are a suitable alternative.

There are a number of ways the actuary can allocate premiums received, that are booked at a higher level of aggregation, to the group of contracts. Possible approaches include, but are not limited to, the following:

- When the policy system and billing system are connected, it may be possible to obtain the amounts needed to derive the premium received at the required level of granularity. In this case, the actuary may need to work with their IT team to create a daily or monthly automated system feed to the financial data.
- In other systems, the premium received (or changes in premiums receivable) at the required granularity can be obtained; however, due to system limitations, the data may only be available outside of the reporting cycle. One solution could be to estimate the expected premium received amounts for each month, then in the next month this amount could be reversed and the actual cash flow could be booked, reflecting the difference between the estimated and actual premiums receipt for the prior period. In these calculations, consideration would need to be given to seasonally written policies, changes in mix of business, and other items impacting the premium receipts.
- In some cases, the billing systems do not have the necessary detail or are outsourced to brokers or other agencies. The total premiums receipts may be booked at a high level, and it may be challenging to allocate these to the required level of granularity.

  One alternative is to obtain information from the policy system instead of the billing system. In most policy systems, when the new or renewal policy is processed, the payment schedule associated with the premium is also recorded. An extraction of premiums due information may be used as a basis of an allocation, however this may not account for premium due but unpaid and premium paid in advance.

[14] Total expected premium receipts are commonly referred to as “written premiums” under IFRS 4.

Where premium due but unpaid and premium paid in advance are available at the required level of detail, premium received could be derived directly by adjusting premiums due by these amounts.

Assumptions used for allocations would need to be updated periodically to account for changes in mix of business, payment behaviour, and other factors.

Canadian Institute of Actuaries | Institut canadien des actuaires

*Draft Educational Note*

# IFRS 17 – Actuarial Considerations Related to P&C Reinsurance Contracts Issued and Held

**Committee on Property and Casualty Insurance Financial Reporting**

**April 2020**

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*The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.*

Canadian Institute of Actuaries | Institut canadien des actuaires

# MEMORANDUM

**To:** Members in the property and casualty insurance area

**From:** Steven W. Easson, Chair
Actuarial Guidance Council

Houston Cheng, Chair
Committee on Property and Casualty Insurance Financial Reporting

**Date:** April 22, 2020

**Subject:** **Draft Educational Note: IFRS 17 – Actuarial Considerations Related to P&C Reinsurance Contracts Issued and Held**

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The Committee on Property and Casualty Insurance Financial Reporting (PCFRC) has prepared this draft educational note to summarize some of the accounting and actuarial implications affecting reinsurance contracts issued and reinsurance contracts held as a result of the upcoming implementation of the International Financial Reporting Standard 17 (IFRS 17 or the Standard) requirements.

The background on accounting treatment of reinsurance contracts outlined in this draft educational note is at a high level; additional information that provides more detail on this topic can be found in International Actuarial Association (IAA) guidance or other CIA documents. The draft educational note *Compliance with IFRS 17 Applicable Guidance* provides guidance to actuaries when assessing compliance with IFRS 17. It is applicable to all draft educational notes pertaining to IFRS 17 and members are encouraged to review it prior to reading any draft education note related to IFRS 17.

The purpose of this draft educational note is to provide the reader with possible interpretations of the Standard, without advocating any particular approach. Each topic presented in this document addresses the implications of the Standard for either a reinsurance contract issued, a reinsurance contract held, or both: level of aggregation, fulfilment cash flow projections, insurance revenue recognition, estimation of the Liability for remaining coverage (LRC), onerous contracts identification and recognition, and residual market mechanisms.

Various stakeholders were consulted prior to releasing this draft educational note: the CIA Committee on Life Insurance Financial Reporting (CLIFR), the CIA Committee on the Appointed/Valuation Actuary (AA), the CIA Committee on Risk Management and Capital Requirements (CRMCR), the Accounting Standards Board (AcSB), the International Insurance Accounting Committee (IIAC), the Committee on Workers Compensation (CWC), and the Group Insurance Practice Committee.

The creation of this cover letter and draft educational note has followed the Actuarial Guidance Council's (AGC's) Protocol for the adoption of educational notes. In accordance with the Institute's *Policy on Due Process for the Approval of Guidance Material other than Standards of Practice and Research Documents*, this draft educational note has been prepared by the PCFRC and has received approval for distribution from the Actuarial Guidance Council on April 14, 2020.

The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.

Questions or comments regarding this draft educational note may be directed to Simon Guénette (Chair of the working group) at sguenette@odysseyre.com or Houston Cheng at hhcheng@kpmg.ca.

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## 1. Introduction

International Financial Reporting Standard 17 Insurance Contracts (IFRS 17 or the Standard) establishes principles for the recognition, measurement, presentation, and disclosure of insurance contracts. The purpose of this draft educational note is to provide practical application guidance on Canadian-specific issues related to actuarial considerations under IFRS 17 for property and casualty (P&C) reinsurance contracts issued and reinsurance contracts held. In this draft educational note, the use of the notation IFRS 17.XX refers to specific paragraphs of IFRS 17, where XX represents the paragraph number.

The International Accounting Standards Board (Board) issued an exposure draft in June 2019 that proposed amendments to IFRS 17, including amendments specifically related to the topic of reinsurance contracts held. Furthermore, the Board has tentatively made decisions on the proposed amendments on the topic of reinsurance at its December 2019 meeting. The details of the proposed amendments are described in section 5.3.3 – Reinsurance Contracts Held – Recovery of Losses on Onerous Groups of Underlying Insurance Contracts.

As noted in IFRS 17.4, all references to insurance contracts also apply to reinsurance contracts held[1], unless otherwise indicated by specific references to insurance contracts issued[2] or as described in IFRS 17.60 through IFRS 17.70[3] for reinsurance contracts held. This draft educational note addresses both reinsurance contracts issued and reinsurance contracts held.

Appendix A of IFRS 17 defines a reinsurance contract as:

> An insurance contract issued by one entity (the reinsurer) to compensate another entity for claims arising from one or more insurance contracts issued by that other entity (underlying contracts).

Where an entity enters into reinsurance contracts to cede insurance risk associated with underlying insurance contracts, the reinsurance contracts held by the ceding entity are recognized and presented in the statement of financial position[4] and in the statement of financial performance[5] separately from the underlying insurance contracts (IFRS 17.78 and IFRS 17.82).

This draft educational note is structured as follows:

- Level of aggregation;
- Actuarial calculations related to fulfilment cash flows;

[1] Reinsurance contracts held are often referred to as reinsurance ceded.
[2] Reinsurance contracts issued are often referred to as reinsurance assumed. Throughout this draft educational note, the term "insurance contracts issued" encompasses all types of insurance contracts (i.e., both primary insurance contracts issued and reinsurance contracts issued).[3] Under the proposed amendments, this reference will become IFRS 17.70A.
[3] Under the proposed amendments, this reference will become IFRS 17.70A.
[4] The statement of financial position is often referred to as the balance sheet.
[5] The statement of financial performance is often referred to as the income statement.

- Insurance revenue considerations;
- Liability for remaining coverage (LRC): premium allocation approach (PAA) and general measurement approach (GMA) considerations;
- Onerous groups identification and recognition – insurance and reinsurance contracts issued; and
- Accounting treatment of residual market mechanisms.

This draft educational note supplements the following:

- CIA Exposure Draft: *Incorporate changes required by the adoption in Canada of IFRS 17, including Principles of International Standard of Actuarial Practice 4 – Actuarial Practice in Relation to IFRS 17 Insurance Contracts, into the Canadian Standards of Practice* (Document 218076, May 2018); and
- Chapter 9 – Reinsurance of the CIA Draft Educational Note *Application of IFRS 17 Insurance Contracts* (Draft IFRS 17 Application EN), which provides general guidance about reinsurance contracts issued and reinsurance contracts held. The Draft IFRS 17 Application EN adopts without modification the *International Actuarial Note 100 Exposure Draft* (*IAN 100 ED*) of the IAA.

In addition, the following draft educational notes may serve as additional useful guidance to actuaries:

- CIA Draft Educational Note: *Comparison of IFRS 17 to Current CIA Standards of Practice* (Document 218117, September 2018);
- CIA Draft Educational Note: *Assessing Eligibility for Premium Allocation Approach Under IFRS 17 for Property & Casualty and Life & Health Insurance* (Draft PAA Eligibility EN);
- CIA Draft Educational Note: *Risk adjustment for P&C insurance companies* (Draft PCFRC Risk Adjustment EN);
- CIA Draft Educational Note: *IFRS 17 Discounting and Cash Flow Considerations for P&C Entities* (Draft PCFRC Discounting EN);
- CIA Draft Educational Note: *Liability for remaining coverage* (Draft PCFRC LRC EN).

In writing this draft educational note, the PCFRC adhered to the following guiding principles:

- Consider Canadian-specific perspectives rather than simply repeating international actuarial guidance;
- Develop application guidance that is consistent with IFRS 17 and applicable Canadian actuarial Standards of Practice and educational notes without unnecessarily narrowing the range of practice allowable under IFRS 17; and
- Consider practical implications associated with the implementation of potential approaches and methods; in particular, ensure that due consideration is given to options that do not require undue cost and effort to implement.

## 2. Level of Aggregation

Under IFRS 17, insurance contracts are aggregated into portfolios of insurance contracts (portfolios) comprising contracts subject to similar risks and managed together (IFRS 17.14). Portfolios are divided into groups of insurance contracts (groups) considering, amongst other things, the expectation regarding the net cash flow of the contracts at initial recognition (i.e., whether the contracts are expected to be onerous).

IFRS 17.47 states, in part, that:

> An insurance contract is onerous at the date of initial recognition if the fulfilment cash flows allocated to the contract, any previously recognised acquisition cash flows and any cash flows arising from the contract at the date of initial recognition in total are a net outflow. (…)

### 2.1. Portfolios and Groups

Based on IFRS 17.16:

> An entity shall divide a portfolio of insurance contracts issued into a minimum of:
>
> (a) a group of contracts that are onerous at initial recognition, if any;
>
> (b) a group of contracts that at initial recognition have no significant possibility of becoming onerous subsequently, if any; and
>
> (c) a group of the remaining contracts in the portfolio, if any.

It should be noted that there is no limit regarding the number of groups contained within a given portfolio. IFRS 17.24 states: "An entity shall establish the groups at initial recognition, and shall not reassess the composition of the groups subsequently." At subsequent valuation, a group of insurance contracts issued that was deemed non-onerous at initial recognition may still become onerous subsequently (or vice versa) if the expectation regarding the future net cash flows of the group changes from positive to negative (or vice versa).

Based on the proposed amendments to IFRS 17 that were related to simplified balance sheet presentation issued by the Board in June 2019 and the subsequent December 2019 Board meeting discussions, insurance contract assets and insurance contract liabilities on the statement of financial position would be presented at the portfolio level rather than at the group level. In the statement of financial position, the portfolios that are in an asset position are presented separately from those that are in a liability position, assuming that the proposed amendment is adopted by the Board. For a given portfolio, the liability for incurred claims (LIC) and the LRC are reported on a combined basis in the statement of financial position.

Note that, even though the measurement of the liabilities is required at the group level, fulfilment cash flows can be estimated at a more or less granular level and then aggregated or allocated to the group level if deemed more appropriate. For example, the entity may determine that Ontario auto is a group, and the actuary may initially estimate liabilities at a coverage level and then aggregate results to the group level. See further discussion in Section 2.2 – The Insurance Contract as the Smallest Unit of Account.

The level of aggregation for reinsurance contracts held is assessed independently from the underlying insurance contracts issued. The level of aggregation requirements for insurance contracts, outlined in IFRS 17.14 through IFRS 17.24, also apply for reinsurance contracts (both issued and held). However, for reinsurance contracts held, IFRS 17.61 replaces references to onerous contracts in those paragraphs with a reference to contracts on which there is a net gain on initial recognition. For a group of reinsurance contracts held, there is no unearned profit but instead a net cost or net gain on purchasing the reinsurance. Therefore, reinsurance contracts held cannot be onerous, as indicated in IFRS 17.68.

For reinsurance contracts held, the level of aggregation (i.e., groups or portfolios) may differ from the level of aggregation of the underlying insurance contracts covered. In many cases, a single reinsurance contract held covers many underlying groups or portfolios. It may therefore be reasonable for a portfolio or a group to consist of a single reinsurance contract held, whereas a portfolio or group of a single underlying P&C insurance contract would be unusual.

### 2.2. The Insurance Contract as the Smallest Unit of Account

Under IFRS 17, the lowest unit of account is the insurance contract. In most cases, it is not permitted to disaggregate individual insurance contracts for the purposes of assessing eligibility for the PAA, identifying groups that are onerous, or financial reporting.

Some reinsurance contracts (issued and held) cover more than one line of business under a single contract. These reinsurance contracts, often referred to as multi-line reinsurance contracts, can take various forms, such as excess-of-loss, aggregate stop-loss, and proportional reinsurance.

IFRS 17 itself does not mandate any change to the actuarial methodologies or processes currently used to estimate the obligations associated with claims that have occurred (i.e., undiscounted fulfilment cash flows associated with the LIC). Thus, the actuary's choice of segments, which are often referred to as lines of business, for the reserving analysis is not necessarily affected by IFRS 17.

Under IFRS 17, each contract would normally be assigned to a specific portfolio and group. For multi-line reinsurance contracts (issued and held), the actuary has three options for assigning those contracts including:

- Aggregating reinsurance contracts based on the predominant exposure covered;
- Creating a portfolio or group containing hybrid or multi-line contracts; or
- Separating the reinsurance contracts into sub-contracts and assigning those sub-contracts to separate groups and possibly portfolios. This option may only be acceptable if the insurer is able to prove that a single legal reinsurance contract was bound solely for the administrative convenience of the policyholder (in this case, the insurer) and the price is simply the aggregate of the standalone prices for the different reinsurance covers provided. (See Agenda Paper 01 (login required) prepared by the Board staff for the February 6, 2018 TRG).

Under the first option, one acceptable methodology is to assign each multi-line reinsurance contract based on its dominant exposure as measured by expected losses, which may be

determined from a pricing analysis. For example, if the majority of the expected losses for a multi-line reinsurance contract covering both casualty and property exposures is driven by casualty exposures, then one approach is to assign such contract to a casualty portfolio and to a casualty group even though the contract also covers property exposures (albeit to a lesser extent).

## 3. Actuarial Calculations Related to Fulfilment Cash Flows

Estimates of the fulfilment cash flows, which include discounting and risk adjustment for non-financial risk (RA), are used for:

- Determining the LIC;
- Determining the LRC when using the GMA; and
- Estimating the loss component (LC) of an onerous group (regardless of use of GMA or PAA).

The definition of the LC and the accounting for groups deemed onerous are found in Section 6.1 – Accounting for Groups Deemed Onerous.

### 3.1. Estimation of the LIC

The LIC consists of the fulfilment cash flows related to past services, which is often referred to as earned business. The LIC is estimated by projecting the fulfilment cash flows for earned business, which comprise:

- An unbiased current estimate of future cash flows (at the "expected value (ie the probability-weighted mean) of the full range of possible outcomes." per IFRS 17.33(a));
- An adjustment to reflect the time value of money; and
- A RA.

### 3.2. Discounting and Cash Flows Considerations

A separate CIA draft educational note will address the topic of discounting under IFRS 17: Draft PCFRC Discounting EN. The discussion in this draft educational note is therefore limited to topics affecting reinsurance contracts issued and reinsurance contracts held.

For entities using the GMA, consistency of measurement for reinsurance contracts held and the underlying contracts is addressed in IFRS 17.63:

> In applying the measurement requirements of paragraphs 32–36 to reinsurance contracts held, to the extent that the underlying contracts are also measured applying those paragraphs, the entity shall use consistent assumptions to measure the estimates of the present value of the future cash flows for the group of reinsurance contracts held and the estimates of the present value of the future cash flows for the group(s) of underlying insurance contracts. In addition, the entity shall include in the estimates of the present value of the future cash flows for the group of reinsurance contracts held the effect of any

> risk of non-performance by the issuer of the reinsurance contract, including the effects of collateral and losses from disputes.

Assumptions selected for the estimation of the present value of the future cash flows for the LIC and the LRC (both PAA and GMA) would normally be consistent between reinsurance contracts held and the underlying insurance contracts. Reference to "consistency" and "consistent assumptions" does not necessarily imply identical assumptions.

Board staff response for TRG (#S40):

> Paragraph 63 of IFRS 17 requires an entity to use consistent assumptions to measure the estimates of the present value of the future cash flows for the group of reinsurance contracts held and the estimates of the present value of the future cash flows for the group(s) of underlying insurance contracts. This consistency is required to the extent that the same assumptions apply to both the underlying contracts and the reinsurance contracts held. This requirement does not require/permit the entity to use the same assumptions used for measuring the underlying contracts when measuring the reinsurance contracts held if those assumptions are not valid for the terms of the reinsurance contracts held. If different assumptions apply for the reinsurance contract held, the entity uses those different assumptions when measuring that contract.

Consistent assumptions can produce differences between the estimates of fulfilment cash flows for insurance contracts issued and the estimates of fulfilment cash flows for reinsurance contracts held. These differences can arise from different sources, such as:

- Contract grouping;
- Contract boundaries;
- Discount rates; and
- RA.

### 3.2.1. Risk of Non-Performance by the Issuer of the Reinsurance Contracts

As noted in the previous section, for the measurement of reinsurance contracts held, IFRS 17.63 states:

> … the entity shall include in the estimates of the present value of the future cash flows for the group of reinsurance contracts held the effect of any risk of non-performance by the issuer of the reinsurance contract, including the effects of collateral and losses from disputes.

When estimating the LIC, and when estimating the LRC under the GMA, the actuary would determine a probability-weighted provision to account for the risk of non-performance of the reinsurer, including consideration for reinsurer default, coverage dispute, and other risk of non-performance. These considerations are similar to those included in the former CIA requirements for provision for adverse deviations (PfAD) for recovery from reinsurance ceded prior to the implementation of IFRS 17. The determination of the IFRS 17 provision, however, may be different. Under IFRS 17, the reinsurance counterparty risk would be included in the

measurement of the estimates of future cash flows for reinsurance contracts held (i.e., it is not calculated separately).

Thus, the risk of non-performance by the issuer of the reinsurance contracts is incorporated as a decrease to the estimates of future cash inflows for reinsurance contracts held. The actuary may choose to estimate this provision separately before combining it with the fulfilment cash flows. Separation of the expected cash flows may facilitate discussions with senior management as well as audit and peer review of the actuarial analyses.

When estimating the risk of non-performance, the actuary would consider:

- The financial strength of the reinsurers;
- The history of claims and coverage disputes with reinsurers; and
- The risk of contagion across various reinsurance arrangements.

### 3.3. Estimation of the RA

A separate CIA draft educational note will address the topic of RA: Draft PCFRC Risk Adjustment EN. The discussion in this draft educational note is therefore limited to topics affecting reinsurance contracts issued and reinsurance contracts held.

#### 3.3.1. The RA associated with reinsurance contracts held

The RA associated with reinsurance contracts held is described in IFRS 17.64, which states:

> Instead of applying paragraph 37, an entity shall determine the risk adjustment for non-financial risk so that it represents the amount of risk being transferred by the holder of the group of reinsurance contracts to the issuer of those contracts.

Chapter 9 of the Draft IFRS 17 Application EN addresses the issue of the RA for reinsurance contracts. Question 9.9 asks: "How is the reinsurance held risk adjustment for non-financial risk determined?" The response states:

> A specific definition for the determination of the risk adjustment for reinsurance contracts held is provided that replaces the general definition in paragraph 37 used for insurance and reinsurance contracts issued in the standard. Under the definition for reinsurance held, the quantum of the risk adjustment for non-financial risk represents the amount of risk being transferred by the holder of a group of reinsurance contracts to the issuer of those contracts (paragraph 64).
>
> The risk adjustment for the reinsurance held can therefore conceptually be thought of as the difference in the risk position of the entity with (i.e., net position) and without (i.e., gross position) the reinsurance held. As a result, the appropriate risk adjustment for the reinsurance held could be determined based on the difference between these amounts.
>
> For reinsurance held, because the risk adjustment for reinsurance held is defined based on the amount of risk transferred to the reinsurer, the risk adjustment for reinsurance held will normally create an asset. On this basis, where a reinsurance

contract held is reported as an asset the risk adjustment will have the effect of increasing the value of the asset, and will decrease the liability value where the reinsurance contract held is reported as a liability.

When estimating the present value of future cash flows and the RA, the actuary has three options:

- Estimate the gross[6] and the net[7], and then calculate the ceded[8] as a difference;
- Estimate the gross and the ceded, and then calculate the net as a difference; or
- Estimate the net and the ceded, and then calculate the gross as a sum.

The RA reflects the compensation that the entity requires for bearing the uncertainty related to non-financial risks and is apportioned to insurance contracts issued and reinsurance contracts held. Ultimately, the key concepts underlying the RA are:

- The RA for the insurance contracts issued represents the compensation that the entity requires for bearing the non-financial risk associated with writing those contracts, and
- The RA for the reinsurance contracts held accounts for the non-financial risk transferred from the cedant to the reinsurer(s).

Any method that meets these concepts would generally be acceptable.

### 3.3.2. Actuarial input on the RA and the role of judgment in estimating the RA

Questions 4.4 and 4.5 of the Draft IFRS 17 Application EN are focused on the role of actuarial input on the RA and the role of judgment in estimating the RA. In responding to these questions, the collaboration required between the actuary and the entity's management is addressed.

The response to Question 4.4 regarding the role of actuarial input on the RA states:

> This actuarial input falls into four parts and can:
>
> - assist in understanding and assessing the risk aversion of the entity …, as it relates to the uncertainty and variability of insurance cash flows, and in understanding the extent to which the entity considers "*the degree of diversification benefit the entity includes when determining the compensation it requires for bearing that risk*" [paragraph B88(a)].
> - provide quantitative measures to help evaluate the variability inherent in the insurance contracts being valued and the uncertainty which underlies such quantitative measures.
> - assist in designing an approach to assess a value in terms of the compensation for bearing risk that reflects the entity's risk aversion, in the context of the

[6] "Gross" in this context refers to contracts issued by an insurer or reinsurance contracts issued by a reinsurer.
[7] "Net" in this context refers to the difference: gross minus ceded.
[8] "Ceded" in this context refers to reinsurance contracts held.

relevant risks, and in the context of the diversification affecting the compensation for such risks.

- provide explanations and insights to help in communicating the understandings and judgments involved, such that the entity's board and management can have the appropriate level of direction and oversight regarding how the risk adjustment is determined.

The response to Question 4.5 concludes with:

> In general, it will be important that the entity's board and management properly understand the process and the judgments used to determine the entity's risk adjustment and how their oversight and management roles and responsibilities are being satisfied.

## 4. Insurance Revenue Considerations

Under IFRS 17, the concept of insurance revenue for reinsurance contracts issued may differ from the concept of earned premium due to:

- Seasonality adjustments that are reflected under IFRS 17 if the expected pattern of release of risk during the coverage period differs significantly from the passage of time;
- Reinstatement premiums that are contemplated in the original reinsurance contract and collected following an insured event are generally applied against insurance service expenses under IFRS 17; and
- Some ceding commission expenses on proportional reinsurance treaties might be included as part of insurance revenue, insurance service expense, or possibly as part of the investment component.

IFRS 17.86 indicates that income or expenses from a group of reinsurance contracts held, other than insurance finance income or expenses, may be presented either:

- As a single amount (i.e., net presentation); or
- Separately as amounts recovered from the reinsurer and an allocation of premiums paid (i.e., gross presentation).

### 4.1. Insurance Revenue Accruals – Reinsurance Contracts Issued

IFRS 17.B126 states that when an entity applies the PAA, insurance revenue for the period is the amount of expected premium receipts allocated to the period. For proportional reinsurance contracts issued, there are many instances where the reinsurance coverage starts before premium is received by the reinsurer. For example, the first bordereau[9] on a proportional reinsurance contract issued having an effective date of January 1 may not be received by the reinsurer until May or June (i.e., more than four or five months after contract inception). In

[9] "Bordereau" in this context refers to the invoice received by the insurer in relation to a proportional treaty.

such instances, an accrual (i.e., expected premium receipt) is used to estimate the insurance revenue reported in the statement of financial performance of the reinsurer.

### 4.2. Insurance Revenue Recognition Pattern

According to IFRS 17.B126, under the PAA, the allocation of insurance revenue to each period of coverage is based on either the passage of time or the expected timing of incurred insurance service expenses (i.e., based on the seasonality of losses). IFRS 17.B126 states:

> When an entity applies the premium allocation approach in paragraphs 55–58, insurance revenue for the period is the amount of expected premium receipts (excluding any investment component and adjusted to reflect the time value of money and the effect of financial risk, if applicable, applying paragraph 56) allocated to the period. The entity shall allocate the expected premium receipts to each period of coverage:
>
> (a) on the basis of the passage of time; but
>
> (b) if the expected pattern of release of risk during the coverage period differs significantly from the passage of time, then on the basis of the expected timing of incurred insurance service expenses.

Examples of reinsurance arrangements where a uniform insurance revenue recognition pattern based on the passage of time may not be applicable include:

- Risk-attaching proportional treaties;
- Catastrophe treaties with material seasonality (e.g., hurricane); and
- Catastrophe treaties with low attachment points and limits for which the exposure may be heavily concentrated in specific months of the year (e.g., hail, flood, and forest fire).

If a new earning pattern is implemented along with IFRS 17, consideration would be given to applying a consistent approach for the calculation of earned premiums if that basis is used as part of the reserving analysis (e.g., Bornhuetter-Ferguson or expected loss ratio method). Consistency between the two methodologies will reduce the amount of explanations and reconciliations that the actuary would be required to perform.

### 4.3. Income or Expenses Presentation Requirements

Based on the economic effect of amounts exchanged between the reinsurer and the cedant, reinstatement premium and commission may have to be recorded as either insurance revenue, insurance service expense, or possibly as part of the investment component. IFRS 17.86 states:

> An entity may present the income or expenses from a group of reinsurance contracts held (see paragraphs 60–70), other than insurance finance income or expenses, as a single amount; or the entity may present separately the amounts recovered from the reinsurer and an allocation of the premiums paid that together give a net amount equal to that single amount. If an entity presents separately the amounts recovered from the reinsurer and an allocation of the premiums paid, it shall:

(a) treat reinsurance cash flows that are contingent on claims on the underlying contracts as part of the claims that are expected to be reimbursed under the reinsurance contract held;

(b) treat amounts from the reinsurer that it expects to receive that are not contingent on claims of the underlying contracts (for example, some types of ceding commissions) as a reduction in the premiums to be paid to the reinsurer; and

(c) not present the allocation of premiums paid as a reduction in revenue.

#### 4.3.1. Reinstatement Premiums

Following the occurrence of an insured event, the ceding company may be required to pay a reinstatement premium to be covered for additional events that may occur during the remainder of the reinsurance contract term. For the purpose of this draft educational note, two types of reinstatements are described: reinstatements contemplated in the original reinsurance contract and additional negotiated reinstatements.

##### 4.3.1.1. Reinstatements Contemplated in the Original Reinsurance Contract

If a ceding entity makes the accounting policy choice to present separately the amounts recovered from a reinsurer and the premiums paid to the reinsurer, the cash flows related to mandatory reinstatement premiums paid are normally considered as an offset to the amounts recovered from the reinsurer. For the reinsurer, given that the amounts exchanged are contingent on claims, the reinstatement premiums collected would be accounted for as a reduction to the insurance service expense.

##### 4.3.1.2. Additional Negotiated Reinstatements

Additional reinstatements can be negotiated as part of a separate reinsurance contract. This type of reinsurance contract is usually negotiated after the occurrence of one or more covered events to ensure that the ceding company remains covered after all contractual reinstatement limits provided in the original reinsurance contract are exhausted. An additional negotiated reinstatement to the reinsurance contract is normally considered outside of the scope of the original reinsurance contract (i.e., the terms are determined and priced independently from the original reinsurance contract and the reinsurer is not obligated to accept the reinstatement premium). As a result, the insurance revenues generated by this new reinsurance contract are considered independent from the claims incurred previously. The premium related to this reinsurance contract are therefore accounted for as reinsurance held by the ceding company and as insurance revenue for the reinsurer.

#### 4.3.2. Commissions for Reinsurance Contracts Issued

Based on IFRS 17.86, if an entity makes the accounting policy choice to present separately the amounts recovered from the reinsurance contracts held and an allocation of the premiums paid for the reinsurance contracts held, the ceding entity shall:

> … treat amounts from the reinsurer that it expects to receive that are not contingent on claims of the underlying contracts (for example, some types of ceding commissions) as a reduction in the premiums to be paid to the reinsurer…

In general terms, the ceding commission (or portion of the ceding commission) paid by the reinsurer to the ceding company that is not contingent on the claims of the underlying contracts would be accounted for as a reduction to insurance revenue in the statement of financial performance of the reinsurer. However, the portion of the commission that is contingent on claims would be accounted for, in the statement of financial performance of the reinsurer, as either an offset to insurance service expense or as an investment component.

Amounts exchanged between the issuer of a reinsurance contract (i.e., the reinsurer) and the holder of a reinsurance contract (i.e., the cedant), such as profit-sharing or sliding scale commission adjustments, may need to be reported as investment components if they are paid after the initial premium is received, and if they are repaid to the policyholder (in this case the cedant) in all circumstances (including when an insured event does not occur and on cancellation of the contract).

The definition of investment component from the Standard may require reinsurance companies to book a portion of the ceded commissions as investment component. In June 2019, the Board issued the following revised definition of investment component[10]: "The amounts that an insurance contract requires the entity to repay to a policyholder in all circumstances, regardless of whether an insured event occurs."

#### 4.3.3. Premium Adjustments Reflecting the Adjusted Exposure Base

According to IFRS 17.B65:

> Cash flows within the boundary of an insurance contract are those that relate directly to the fulfilment of the contract, including cash flows for which the entity has discretion over the amount or timing. The cash flows within the boundary include:
>
> (a) premiums (including premium adjustments and instalment premiums) from a policyholder and any additional cash flows that result from those premiums.

Premium adjustments related to services rendered in past periods, and reflecting any adjustments to the exposure base (e.g., gross net earned premium) are normally independent from the cedent loss experience. These premiums adjustments would therefore be accounted for as insurance revenues in the financial period in which they are received. This can be the year in which services are rendered or a subsequent year.

### 4.4. Reconciliation with Accounting Standards from Other Jurisdictions

Some insurers and reinsurers licensed in Canada operate as part of international groups with a head office domiciled in a jurisdiction that is not required to comply with IFRS 17. The

[10] Note that a similar definition was included in the original Standard: "The amounts that an insurance contract requires the entity to repay to a policyholder even if an insured event does not occur."

consolidated financial reporting for these insurers may, in some cases, remain in their head office's jurisdiction reporting framework (e.g., US generally accepted accounting principles (GAAP)). In these circumstances, the actuary may be required to produce an estimation of liabilities under two separate bases: IFRS 17 for local Canadian regulatory reporting purposes and the financial reporting framework required in the jurisdiction of their head office. In such cases, the actuary may be required to assess the effect and explain any differences in accounting methodologies. For example, undiscounted fulfilment cash flow estimates associated with the LIC for reinsurance contracts issued and reinsurance contracts held under IFRS 17 would, in most cases, reconcile with assumed and ceded unpaid claims under US GAAP. Any differences between the two figures would need to be understood and explained.

## 5. LRC: PAA and GMA Considerations

The LRC consists of the obligation that relates to future services (i.e., the unexpired portion of the coverage period), which is often referred to as unearned business. The LRC can be estimated using the GMA or the PAA, if the option is available and the entity elects to use this approach.

### 5.1. Estimation of the LRC

Based on IFRS 17.55, under the PAA, at initial recognition, the LRC is calculated as premiums received, which are equivalent to the unearned premiums less premiums receivable, minus the insurance acquisition cash flows, unless the entity chooses to recognize insurance acquisition cash flows as expenses as they are incurred in accordance with IFRS 17.59(a).

Assuming that the entity has no financing component and no investment component, the LRC at the end of each subsequent reporting period is calculated as:

- The amount of the LRC carried at the start of the reporting period;
- Plus any premiums received in the period;
- Minus insurance acquisition cash flows, unless the entity chooses to recognize insurance acquisition cash flows as expenses as they are incurred in accordance with IFRS 17.59 (a);
- Plus any amounts related to the amortization of insurance acquisition cash flows recognized as expense in the reporting period, unless the entity chooses to recognize insurance acquisition cash flows as expenses as they are incurred in accordance with IFRS 17.59 (a);
- Minus any amounts recognized as insurance revenue for coverage provided in the period.

Any LC on onerous groups are included in the LRC.

Under the GMA, the LRC is calculated as the sum of the fulfillment cash flows related to future services and the contractual service margin (CSM). The CSM represents the projected unearned profit on a group. The CSM for reinsurance contracts held is determined in the same manner as for insurance contracts issued, but instead of reflecting the unearned profit, the CSM is the expected "net cost or net gain on purchasing the group of reinsurance contracts held" (IFRS

17.65). Thus, unlike the CSM for underlying insurance contracts, the CSM on reinsurance contracts held can be positive or negative.

More information about the CSM calculation and amortization is provided in Section 5.3.1 – Coverage Units and the CSM.

### 5.2. PAA Eligibility

The topic of PAA eligibility is covered in detail in a separate CIA draft educational note: Draft PAA Eligibility EN. Thus, similar to the topics of discounting and RA, this draft educational note is limited to a discussion of PAA eligibility related to reinsurance contracts issued and held.

#### 5.2.1. PAA Eligibility for Reinsurance Contracts Issued

The PAA eligibility assessment for reinsurance contracts issued is similar to the assessment for primary insurance contracts. For reinsurance contracts issued, the analysis is based on IFRS 17.53, which states:

> An entity may simplify the measurement of a group of insurance contracts using the premium allocation approach set out in paragraphs 55–59 if, and only if, at the inception of the group:
>
> (a) the entity reasonably expects that such simplification would produce a measurement of the liability for remaining coverage for the group that would not differ materially from the one that would be produced applying the requirements in paragraphs 32–52; or
>
> (b) the coverage period of each contract in the group (including coverage arising from all premiums within the contract boundary determined at that date applying paragraph 34) is one year or less.

In accordance with IFRS 17, the estimated LRC for a group of reinsurance contracts issued may be calculated using the PAA if all contracts within the group have a coverage period of one year or less. If any contract within the group has a coverage period greater than one year, the PAA would only be used to estimate the LRC if the PAA provides a reasonable approximation of the GMA.

#### 5.2.2. PAA Eligibility for Reinsurance Contracts Held

For reinsurance contracts held, IFRS 17.69 states similar considerations:

> An entity may use the premium allocation approach … to simplify the measurement of a group of reinsurance contracts held, if at the inception of the group:
>
> (a) the entity reasonably expects the resulting measurement would not differ materially from the result of applying the requirements in paragraphs 63–68; or
>
> (b) the coverage period of each contract in the group of reinsurance contracts held … is one year or less.

The considerations above for reinsurance contracts held are very similar to the considerations outlined for reinsurance contracts issued.

### 5.2.3. Considerations Related to Loss-Occurring vs. Risk-Attaching Reinsurance Treaties

For loss-occurring reinsurance contracts where the coverage period can be easily defined as one year or less based on the contract's effective date and expiry date, entities can opt to use the PAA.

For 12-month risk-attaching reinsurance treaties covering underlying insurance contracts with terms of 12 months, the reinsurance coverage would usually span two loss occurrence years, assuming that underlying contracts are underwritten throughout the year. Such risk-attaching treaties provide coverage that extends beyond a one-year coverage period.

When the coverage period of reinsurance contracts is greater than one year, entities have to determine PAA eligibility by demonstrating that the measurement of the LRC does not differ materially between the GMA and the PAA.

### 5.2.4. Determination of Coverage Period for Reinsurance Contracts Issued or Held

Reinsurance contracts have a variety of features that the actuary would consider when determining the coverage period. Options to extend the reinsurance contract may affect the contract boundary and therefore the PAA eligibility. Alternatively, cancelation provisions may shorten the contract boundary to the extent that they are available to both parties (reinsurer and cedant). These cancelation provisions would also impact the assessment of PAA eligibility.

On the topic of coverage period and contract boundary, IFRS 17.34 states:

> … A substantive obligation to provide services ends when:
>
> (a) the entity has the practical ability to reassess the risks of the particular policyholder and, as a result, can set a price or level of benefits that fully reflects those risks; or
>
> (b) both of the following criteria are satisfied:
>
> > (i) the entity has the practical ability to reassess the risks of the portfolio of insurance contracts that contains the contract and, as a result, can set a price or level of benefits that fully reflects the risk of that portfolio; and
> >
> > (ii) the pricing of the premiums for coverage up to the date when the risks are reassessed does not take into account the risks that relate to periods after the reassessment date.

Contractual cancellation provisions of reinsurance contracts issued and held would be considered when assessing PAA eligibility. To the extent that cancellation provisions are available to both parties (i.e., the reinsurer and the cedant), they may have the effect of shortening the contract boundary. As a result, such cancelation provisions would generally increase the likelihood of the reinsurance contract being PAA eligible. For example, some multi-year reinsurance contracts have a cancel and re-write provision at the option of the cedant.

These types of reinsurance contracts are normally considered long-term (i.e., more than one year), and therefore PAA eligibility assessment is required.

Non-contractual cancellations (e.g., early contract termination following the sale of an entity, loss portfolio transfers, novations, and commutations) normally occur after the reinsurance contract inception date. These types of cancellations are usually unknown at inception and would not affect PAA eligibility. Non-contractual cancellations are requested by one of the parties bound by the reinsurance contract and agreed by the other(s).

In the case of an early termination and/or commutation, the accounting is fairly simple. The insured party regains ownership of all ceded assets and liabilities (i.e., the LIC and LRC). In parallel, the assets and liabilities held by the reinsurer in relation to the reinsurance contract issued are considered settled.

Depending on the circumstances, a loss portfolio transfer or novation may need to be accounted for as an acquired portfolio. The CSM for an acquired portfolio is amortized over the expected settlement period.

### 5.3. GMA Considerations

#### 5.3.1. Coverage Units and the CSM

For insurance contracts and reinsurance contracts issued, the CSM represents the unearned profit that the entity will recognize as it provides services in the future (IFRS 17.38).

For reinsurance contracts held, the concept of CSM is modified. According to IFRS 17.65:

> The requirements of paragraph 38 that relate to determining the contractual service margin on initial recognition are modified to reflect the fact that for a group of reinsurance contracts held there is no unearned profit but instead a net cost or net gain on purchasing the reinsurance.

The CSM for reinsurance contracts held is determined in the same manner as for insurance (or reinsurance) contracts issued, but the CSM can be positive or negative. According to IFRS 17.68, “reinsurance contracts held cannot be onerous.” Therefore, the cost of reinsurance contracts held is normally recognized over the life of the reinsurance contract.

In the statement of financial position, the CSM is booked as part of the LRC. The CSM is released consistent with the quantity of benefits provided and the expected duration of the group.

According to IFRS 17.B119:

> An amount of the contractual service margin for a group of insurance contracts is recognised in profit or loss in each period to reflect the services provided under the group of insurance contracts in that period ... The amount is determined by:
>
> (a) identifying the coverage units in the group. The number of coverage units in a group is the quantity of coverage provided by the contracts in the group, determined by considering for each contract the quantity of the benefits provided under a contract and its expected coverage duration.

(b) allocating the contractual service margin at the end of the period (before recognizing any amounts in profit or loss to reflect the services provided in the period) equally to each coverage unit provided in the current period and expected to be provided in the future.

(c) recognizing in profit or loss the amount allocated to coverage units remaining in the period.

The coverage units would therefore be calculated consistently with the amount of benefits provided. For a standard loss occurring reinsurance treaty, this may imply a straight line CSM release pattern. For an adverse development reinsurance contract, the coverage units may be based on the expected amounts of underlying claims[11], and for a risk attaching treaty, the coverage units may be based on the underlying policies renewal pattern (i.e., the parallelogram method).

#### 5.3.2. Potential Timing Mismatch: Reinsurance Contract Held Evaluated under the GMA

In many reinsurance contracts held, neither party has the right to cancel the contract unilaterally without a valid reason (e.g., fraud or material misrepresentation). In most cases, cancellation must be mutually agreed upon.

When estimating the LRC for reinsurance contracts held valued under the GMA, the ceding company would include all projected cash flows, including those related to underlying contracts that have not yet been issued, unless the reinsurance contract includes unilateral cancellation conditions. Failure to do so would contradict the fundamental principle of IFRS 17 that all future cash flows within the boundary of each contract in the group are reflected in the measurement of an insurance contract.

The projected fulfillment cash flows for reinsurance contracts held extend to the entire exposure period (e.g., up to two years for a risk-attaching contract). The fulfillment cash flows of the subject contracts only include those underlying contracts for which insurance revenues have been recognized as per IFRS 17.25 (recognition). For example, at the end of the first quarter, assume that a primary insurer has written 25% of its policies (based on uniform writings throughout the year) and that the LRC for the underlying contracts is evaluated using the GMA. This means that 25% of the expected full year revenues would be recognized. However, the fulfilment cash flows on the risk-attaching reinsurance contract held as of January 1 would include the projected cash flows on 100% of the policies expected to be written throughout the year. Note that this issue only occurs if the entity is using the GMA to estimate the LRC for reinsurance contracts held.

The actuary and management would need to understand this potential inconsistency and be able to explain any implication on the financial statements of the organisation.

[11] Additional information about coverage units and CSM amortization for adverse development reinsurance contract can be found in the IFRS 17 TRG staff paper of May 2018.

### 5.3.3. Reinsurance Contracts Held – Recovery of Losses on Onerous Groups of Underlying Insurance Contracts

For underlying insurance contracts that are expected to be onerous at initial recognition, IFRS 17 requires a company to recognize the expected losses when the group becomes onerous.

The recovery of losses from reinsurance contracts held covering onerous groups of underlying contracts has been addressed in the proposed amendments to IFRS 17 issued by the Board in June 2019 and the subsequent tentative approval at the Board meeting on December 11–12, 2019. Based on the amendment, an entity would adjust the CSM of a group of reinsurance contracts held, and as a result recognize income, when the entity recognizes a loss on initial recognition of an onerous group of underlying insurance contracts, or on addition of new onerous contracts to that group.

The proposed calculation of the income would require an entity to determine the amount of a loss recovered from a reinsurance contract held by multiplying:

- The loss recognised on the group of underlying insurance contracts; and
- The percentage of claims on underlying insurance contracts the entity expects to recover from the reinsurance contract held.

The proposed amendment does not affect the accounting for insurance contracts issued. It only affects the timing of loss recognition (gains for the ceding company) for reinsurance contracts held.

The intent of the proposed amendment is to recognize the expected losses from onerous insurance contracts issued and the recoveries of those losses from reinsurance contracts held that cover those same underlying onerous contracts in the same financial period. However, the proposed amendment might not perfectly correct the revenue matching issue if the reinsurance held is accounted for under the GMA.

Under the GMA with no unilateral cancellation rights, the expected cash flows (and expected profit or losses) of a given contract are projected for the entire contract period. In a simple example of a 12-month loss-occurring reinsurance contract held, the contract boundary is 12 months. However, at interim valuation periods, the cedant will only have written a fraction of the subject business. The expected gain from the reinsurance contract held might therefore outweigh the expected loss on the underlying onerous contracts. This potential mismatch is described in detail in 5.3.2 – Potential Timing Mismatch: Reinsurance Contract Held Evaluated under the GMA.

## 6. Onerous Contracts Identification and Recognition – Insurance and Reinsurance Contracts Issued

Based on IFRS 17.47, “an insurance contract is onerous at the date of initial recognition if the fulfilment cash flows allocated to the contract… are a net outflow.”

For reinsurance contracts held, the concept of onerous groups does not exist (IFRS 17.61). Under the GMA, the CSM for reinsurance contracts held is determined in the same manner as for insurance contracts issued, but the CSM can be positive or negative.

The remainder of this section applies equally to insurance contracts and reinsurance contracts issued.

### 6.1. Accounting for Groups Deemed Onerous

The LC is defined as the expected net outflow of an onerous group. The LC is booked as part of the LRC in the statement of financial position. On the statement of financial performance, the effect of the LC is recognized as insurance service expense.

When estimating the LC under both the PAA and the GMA, the expected net outflow is projected for the entire contract period. In other words, the LC is calculated based on the projected full-term premium. Moreover, the fulfilment cash flows include the effect of discounting and RA.

The LC is reported as part of the LRC. IFRS 17.50–52 requires an entity to make a systematic allocation of the subsequent changes in fulfilment cash flows between the LC portion of the LRC and the LRC, excluding the LC.

### 6.2. Recognition of LC on Onerous Groups

According to IFRS 17.25:

> An entity shall recognise a group of insurance contracts it issues from the earliest of the following:
>
> (a) the beginning of the coverage period of the group of contracts;
>
> (b) the date when the first payment from a policyholder in the group becomes due; and
>
> (c) for a group of onerous contracts, when the group becomes onerous.

Initial recognition will therefore take place either at the effective date of the group or at the date when the first payment from the policyholder becomes due unless the group is onerous, in which case initial recognition will take place earlier, with the earliest possible date for initial recognition being the “issue date” (which is the date the terms of the contract are set and the parties are bound). In many cases, this means that the recognition of the LC on onerous groups may need to be made prior to the effective date of the insurance or reinsurance contract issued. For example, assume a contract issued with an effective date of January 1, 20X3 is bound during the last week of December 20X2. If the entity is aware that this contract is onerous when bound, then the entity would book a LC in the financial statements as of December 31, 20X2.

### 6.3. Onerous Contracts Assessment under the PAA

IFRS 17.18 states that for contracts issued to which an entity applies the PAA, the entity shall assume no contracts in the portfolio are onerous at initial recognition, unless facts and circumstances indicate otherwise.

#### 6.3.1. Onerous Contracts: Initial Recognition

Contracts measured using the PAA are presumed to be profitable at initial recognition unless management identifies facts and circumstances that indicate otherwise. Similarly, for

subsequent measurement, an onerous contract test is only required if there are facts and circumstances indicating that a group may be onerous.

IFRS 17 does not provide specific guidance about what facts and circumstances need to be considered in assessing whether a contract (or group) is onerous, and thus management's judgment is required. Facts and circumstances would generally be expected to comprise information that is readily available to senior management and the finance function as part of the regular financial reporting and planning processes. Financial planning, as used in this context, includes review of pricing insight and decisions to the extent that these influence operational planning, forecasting, and reporting to stakeholders. Information that would constitute facts and circumstances could include[12]:

- Forward-looking analyses of expected performance compared to historical performance (such as expected loss ratio or combined ratio measures);
- Strategic pricing objectives (such as loss leaders or diminished margins due to competitive pressures); and
- Significant changes to the expected costs of fulfilling insurance contracts (such as economic or regulatory changes that affect expected cash flows).

Testing of the fulfilment cash flows may be counter to the simplification sought by applying the PAA. Insurers could therefore define an indicator to test whether a group might potentially be onerous. A metric such as the combined ratio may be an option to identify onerous groups. The indicator may vary by line of business and account for the estimated combined effect of the discounting and RA. The actuary may assist management in establishing these indicators. A complete estimation of the fulfilment cash flows would only be needed when a certain threshold is reached for the indicator.

For some reinsurers, contract level pricing information may be available to senior management. In those instances, management may choose to consider individual reinsurance contract level pricing information to identify onerous contracts.

#### 6.3.2. Onerous Contracts: Subsequent Measurement

Based on IFRS 17.17:

> If an entity has reasonable and supportable information to conclude that a set of contracts will all be in the same group applying paragraph 16, it may measure the set of contracts to determine if the contracts are onerous … and assess the set of contracts to determine if the contracts have no significant possibility of becoming onerous subsequently…

If management identifies a group that is onerous at any point before its effective date, the group would be recognized at the date at which it is deemed onerous, and a LC would be estimated for that group.

[12] Extract taken from IBC IFRS 17 Working Group Guidance Paper *Premium Allocation Approach: Onerous Contracts and "Facts and Circumstances"* (November 2019).

Applying the PAA, a group that was deemed non-onerous at initial recognition may be determined to be onerous at subsequent measurement due to changes in facts and circumstances that are unfavourable to the group. Examples of situations that may affect the expected profitability of a specific group include[13]:

- Judicial or legal findings (e.g., landmark court cases);
- Changes in the regulatory environment;
- Shifts in the economic environment (e.g., trends, interest rates);
- Allocation of expenses; or
- Changes in the RA in total or in the allocation of the RA[14].

Similarly, a group that was deemed onerous at initial recognition may, at a later date, be determined to not be onerous due to changes in facts and circumstances that are favourable to the group.

## 7. Accounting Treatment of Residual Market Mechanisms

The Facility Association (FA) administers, on behalf of its members, several residual market mechanisms. These residual market mechanisms are:

- Facility Association Residual Market (FARM);
- Risk Sharing Pools (RSPs); and
- Uninsured Automobile Funds (UAFs).

The accounting treatment of each mechanism under IFRS 17 is the responsibility of each member company (referred to collectively as "FA membership"). It is therefore up to the membership to reach a consensus on the accounting treatment of FARM, RSPs, UAFs, and the Plan de Répartition des Risques (PRR) in Québec.

Research conducted by FA confirmed that each of the residual market mechanisms above involves insurance contracts, and therefore IFRS 17 applies.

For the FARM and UAFs, the research conducted by FA[15] concluded that the insurance contracts are issued by the "collective" of the FA membership. FA administers the contracts but is not the actual entity to which the insurance risk is transferred to – the insurance risk is transferred to the FA membership. On this basis, the current accounting treatment continues under IFRS 17 (i.e., members account for their share of FARM and UAF insurance contracts as direct business (i.e., insurance contracts issued).

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[13] Extract taken from IBC IFRS 17 Working Group Guidance Paper *Premium Allocation Approach: Onerous Contracts and "Facts and Circumstances"* (November 2019).

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[15] Research conducted by FA can be found at the following address: http://www.facilityassociation.com/IFRS17-research.asp.

For the RSPs, an original insurance contract is issued by one of the FA members, who then, under a second and separate transaction, transfers some or all of the insurance risk from that contract to the "collective" of the FA membership. In this case, FA is administering the process, but it does not assume any insurance risk directly. When IFRS 4 was introduced, the previous accounting treatment was allowed to continue. This treatment was such that the transaction from the original issuing member to the collective was a novation[16] type transfer, so that the original issuer was able to remove the insurance from their balance sheet. The issue with this accounting treatment is that one of the parties (i.e., the policyholder) is unaware of the second transaction (i.e., the transfer of the risk from the insurer to the RSPs).

Research conducted by FA concluded that the RSPs do not truly represent a transfer of the underlying insurance contract but rather represent a transfer of some or all insurance risk that is transferred from the original policyholder to the issuing member. As such, FA believes that it would not qualify for transfer accounting but would qualify for reinsurance accounting.

[16] A novation involves the transfer of contractual rights and obligations from one party to another with all three parties agreeing to the terms (i.e., the original two parties to the contract and the new party that is accepting the transfer of contractual rights).

Canadian Institute of Actuaries / Institut canadien des actuaires

*Revised Draft Educational Note*

# IFRS 17 Discount Rates and Cash Flow Considerations for Property and Casualty Insurance Contracts

**Committee on Property and Casualty Insurance Financial Reporting**

**December 2020**

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*The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.*

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# MEMORANDUM

**To:** Members in the Property and Casualty Insurance Practice Area

**From:** Steven W. Easson, Chair
Actuarial Guidance Council

Sarah Chevalier, Chair
Committee on Property and Casualty Insurance Financial Reporting

**Date:** December 7, 2020

**Subject:** **Revised Draft Educational Note: IFRS 17 Discount Rates and Cash Flow Considerations for Property and Casualty Insurance Contracts**

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The Committee on Property and Casualty Insurance Financial Reporting (PCFRC) has prepared this draft educational note to provide guidance related to setting and applying discount rates (including cash flow considerations) for the purposes of calculating the present value of estimates of future cash flows under IFRS 17.

This draft educational note is structured in sections as follows:

- Sections 1 and 2, respectively, provide an introduction and a list of the terminology used in this draft educational note.
- Sections 3 through 7 illustrate various considerations in determining an entity's fulfilment cash flows, including selecting an IFRS 17 discount curve.
- Sections 8 through 13 provide additional guidance around the application of discount rates, measuring changes in discounting assumptions, and other aspects of financial statement presentation.
- Section 14 describes the illustrative examples set out in Appendices 1 through 7, detailed in the Excel file that forms part of this draft educational note.

This draft educational note is focused on the Canadian market, economic environment, and products. Similar considerations and approaches could be used for setting the discount rates for other currencies. It is written from the perspective of Canadian actuaries and is not intended to duplicate any other guidance. Additional information that provides more details can be found in IAA guidance or other CIA documents. The draft educational note *Compliance with IFRS 17 Applicable Guidance* provides guidance to actuaries when assessing compliance with IFRS 17. It is applicable to all educational notes pertaining to IFRS 17 and members are encouraged to review it prior to reading any educational note related to IFRS 17.

A preliminary version of the draft educational note was provided to the following committees for their review and comments, and presented at the Actuarial Guidance Council (AGC) in the months preceding its approval:

- Committee on Life Insurance Financial Reporting (CLIFR)
- Committee on Risk Management and Capital Requirements (CRMCR)
- Committee on the Appointed/Valuation Actuary
- International Insurance Accounting Committee (IIAC)
- Committee on Worker's Compensation
- Group Insurance Practice Committee
- ASB's Designated Group on IFRS 17.

A preliminary version of the draft educational note was also shared with the staff of the Accounting Standards Board (AcSB) to broaden consultations with the accounting community. Given this educational note provides actuarial guidance rather than accounting guidance, the AcSB staff review was limited to citations of and any inconsistencies with IFRS 17. CIA educational notes do not go through the AcSB's due process and therefore, are not endorsed by the AcSB.

The subcommittee feels that it has addressed the material comments received by the various committees.

Although most P&C cash flows are within the observable period, this draft educational note refers to discount curves in the unobservable period, based on guidance developed by CLIFR in respect of discount rates for Life and Health Insurance Contracts.

The creation of this cover letter and draft educational note has followed the Actuarial Guidance Council's Protocol for the Adoption of Educational Notes. In accordance with the Institute's *Policy on Due Process for the Approval of Guidance Material other than Standards of Practice and Research Documents*, this draft educational note has been prepared by PCFRC and has received approval for distribution from the AGC on August 11, 2020.

The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.

If you have any questions or comments regarding this educational note, please contact Sarah Chevalier at sarahchevalier@axxima.ca.

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## 1. Introduction

IFRS 17 Insurance Contracts (IFRS 17) establishes principles for the recognition, measurement, presentation, and disclosure of insurance contracts. The purpose of this draft educational note is to provide practical guidance on Canadian-specific issues relating to discounting estimates of future cash flows for property and casualty (P&C) insurance companies under IFRS 17. References to specific paragraphs of IFRS 17 are denoted by IFRS 17.XX, where XX represents the paragraph number.

As indicated in IFRS 17.B72 and summarized below, various discount rates are used for applying IFRS 17. Chapter 3 of the CIA draft educational note (EN) *Application of IFRS 17 Insurance Contracts* (IFRS 17 Application EN) provides general guidance about discount rates. The draft educational note *IFRS 17 Application* adopts without modification International *Actuarial Note 100 Exposure Draft* (*IAN 100 ED*) of the International Actuarial Association (IAA).

Guidance in respect of each of these applications is provided in Question 3.2 of the CIA IFRS 17 Application EN:

| | **Application under IFRS 17** | **Discount rate to be used** | **Guidance in IFRS 17 Application EN** |
|---|---|---|---|
| a) | To measure the fulfilment cash flows. | Current discount rates applying IFRS 17.36. | 3.11–3.31 |
| b) | To determine the interest to accrete on the contractual service margin (CSM) applying IFRS 17.44(b) for insurance contracts without direct participation features. | Discount rates determined at the date of initial recognition of a group of contracts, applying IFRS 17.36 to nominal cash flows that do not vary based on the returns on any underlying item. | 3.36 |
| c) | To measure the changes to the CSM applying IFRS 17.B96(a)–B96(c) for insurance contracts without direct participation features. | Discount rates applying IFRS 17.36 determined on initial recognition. | 3.37 |
| d) | For groups of contracts applying the premium allocation approach (PAA) that have a significant financing component, to adjust the carrying amount of the liability for remaining coverage (LRC) applying IFRS 17.56. | Discount rates applying paragraph IFRS 17.36 on initial recognition. | 3.33 and 3.34 |

| | **Application under IFRS 17** | **Discount rate to be used** | **Guidance in IFRS 17 Application EN** |
|---|---|---|---|
| e) | If an entity chooses to disaggregate insurance finance income or expenses between profit or loss and other comprehensive income (OCI) (see IFRS 17.88), to determine the amount of the insurance finance income or expenses included in profit or loss. | | |
| | (i) For groups of insurance contracts for which changes in assumptions that relate to financial risk do not have a substantial effect on the amounts paid to policyholders, applying IFRS 17.B131. | Discount rates determined at the date of initial recognition of a group of contracts, applying IFRS 17.36 to nominal cash flows that do not vary based on the returns on any underlying items. | 3.38 |
| | (ii) For groups of insurance contracts for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to policyholders, applying IFRS 17.B132(a)(i). | Discount rates that allocate the remaining revised expected finance income or expenses over the remaining duration of the group of contracts at a constant rate. | 3.39 |
| | (iii) For groups of insurance contracts applying the PAA applying IFRS 17.59(b) and IFRS 17.B133. | Discount rates determined at the date of the incurred claim, applying IFRS 17.36 to nominal cash flows that do not vary based on the returns on any underlying items. | 3.35 |

Under IFRS 17, insurance contract liabilities include the liability for remaining coverage (LRC) and the liability for incurred claims (LIC). Fulfilment cash flows for these liabilities, when calculated using the general measurement approach (GMA), are described in IFRS 17.32(a), which states that the fulfilment cash flows comprise:

(i) estimates of future cash flows;

(ii) an adjustment to reflect the time value of money and the financial risks related to the future cash flows, to the extent that the financial risks are not included in the estimates of the future cash flows; and

(iii) a risk adjustment for non-financial risk.

This draft educational note provides practical application guidance and illustrative examples (basic and with options) on issues relating to determining discount rates and other discounting assumptions and applying such assumptions to the LIC for P&C insurance contracts. In respect of LRC for P&C entities, the discount rate guidance in this draft educational note should be read in conjunction with the draft educational note being developed by PCFRC to address all aspects of LRC.

This draft educational note supplements the following:

- CIA Revised Exposure Draft (Document 220036, March 2020): *Incorporate changes required by the adoption in Canada of IFRS 17 Insurance Contracts, including Principles of International Standard of Actuarial Practice 4 – Actuarial Practice in Relation to IFRS 17 Insurance Contracts, into the Canadian Standards of Practice*.
- CIA Draft Educational Note (Document 219020, February 2019): *Application of IFRS 17 Insurance Contracts*, and in particular Chapter 3 (Discount Rates).

In addition, the following draft educational notes are referenced in the commentary that follows and may serve as additional useful guidance to actuaries:

- CIA Draft Educational Note (September 2018): *Comparison of IFRS 17 to current CIA standards of practice*.
- CIA Draft Educational Note (May 2020): *Risk adjustment for Non-Financial Risk for Property and Casualty Insurance Contracts* (PCFRC Risk Adjustment EN).
- CIA Draft Educational Note (April 2020): *IFRS 17 – Actuarial Considerations Related to P&C Reinsurance Issued and Held* (PCFRC Reinsurance EN).
- CIA Draft Educational Note (forthcoming): Liability for remaining coverage for Property and Casualty Insurance Contracts (PCFRC LRC EN).

In writing this draft educational note, PCFRC followed the following guiding principles:

- Consider Canadian-specific perspectives rather than simply repeating international actuarial guidance.
- Develop application guidance that is consistent with IFRS 17 and applicable Canadian actuarial Standards of Practice and educational notes without unnecessarily narrowing the choices available in IFRS 17.
- Consider practical implications associated with the implementation of potential approaches and methods; in particular, ensure that due consideration is given to options that do not require undue cost and effort to implement.

## 2. Terminology

The following terminology is used in this draft educational note:

- **Discount rate:** Rate used to discount the estimates of future cash flows which is consistent with the timing, liquidity and currency of the insurance contract cash flows.

A discount rate may be a single rate, or a curve of rates varying by duration. "Discount rate curve" and "yield curve" are used interchangeably in this draft educational note.

- **Estimates of future cash flows:** Future undiscounted cash flows arising from the insurance contracts or reinsurance held contracts.
- **Forward rate:** The interest rate implied by the yield curve over a given future period. Mathematically, the forward rate over time [n-1, n] is

$$f_n = \frac{(1+y_n)^n}{(1+y_{n-1})^{n-1}} - 1\,,$$

where $y_n$ denotes the spot rate for maturity *n*. The forward rate over time [n-1, n] can be conceptualized as the interest rate that equates the strategies of

  - investing in the n-year spot rate, and
  - investing in the (n-1)-year spot rate and then in the forward rate.

- **Fulfilment cash flows:** Present value of the estimates of future cash flows plus the risk adjustment for non-financial risk (risk adjustment).
- **Insurance finance income or expense:** The change in the carrying amount of the group of insurance contracts arising from the effect of the time value of money and changes in the time value of money and financial risk. This may be separated into three components, as follows, although it is not a requirement to do so:
  - Unwinding of discount: Insurance finance expense arising from the release of the effect of discounting at a subsequent measurement date due to the passage of time.
  - Changes in discounting assumptions: Insurance finance income or expense arising from changes in discount rates at a subsequent measurement date.
  - Changes in the effect of financial risk other than discounting (unlikely to be relevant to P&C insurance contracts).
- **Liquidity premium:** Adjustment made to a liquid risk-free yield curve to reflect differences between the liquidity characteristics of the financial instruments that underlie the (risk-free) rates observed in the market and the liquidity characteristics of the insurance contracts. The term "liquidity premium" in this draft educational note has the same meaning as the term "illiquidity premium" in the IFRS 17 Application EN.
- **Payment pattern:** Expected pattern of payment of future cash flows.
- **Present value:** Future cash flows discounted to the valuation date.
- **Reference portfolio:** A portfolio of assets used to derive discount rates based on current market rates of return, adjusted to remove returns related to risk characteristics embedded in the portfolio that are not inherent in insurance contracts. For cash flows of insurance contracts that do not vary based on the returns on the assets in the reference portfolio, such adjustments may include:

  - adjustments for differences between the portfolio and the insurance contract cash flows in respect of the timing, currency and liquidity of cash flows; and
  - excluding premiums for credit risk and which are relevant only to the assets included in the reference portfolio.

- **Spot rate:** The current interest rate available for a cash flow with a given time to maturity.
- **Yield curve:** The set of spot rates as a function of time to maturity.
- **Yield to maturity:** The annual rate of return of a bond (or group of bonds) assuming that the investor holds the bond(s) until the maturity date(s).

This draft educational note applies to the LRC and the LIC of insurance and reinsurance contracts issued and reinsurance held contracts.

## 3. Determining estimates of future cash flows

Unless specified otherwise, "ceded" refers to reinsurance held, and "net" refers to net of reinsurance held.

Under IFRS 17, fulfilment cash flows are required in respect of insurance contracts issued, reinsurance contracts issued and reinsurance contracts held. Depending on the organization of the available data and the correspondence between the direct and reinsurance held groups, the actuary may choose to estimate the future cash flows pertaining to reinsurance contracts held by subtracting net future cash flows (i.e., net of reinsurance held) from gross future cash flows (i.e., insurance and reinsurance contracts issued). When doing so, the implied ceded cash flows would be assessed for reasonableness.

The actuary may consider the following:

- Data availability: If there is sparse or limited data for ceded claims, it may not be possible or appropriate to directly estimate the present value of ceded cash flows.
- Cash flow volatility: Different approaches may be warranted for different segments of business depending on the volatility of cash flows by segment.
- Reinsurance held: Consideration would be given to the type and consistency of an entity's reinsurance held. For example, it may not be appropriate to use the net basis as a starting point if the entity's retention has changed significantly over the experience period.

Estimates of future cash flows are typically determined by applying payment patterns to selected estimates of future unpaid losses (prior to consideration of the time value of money) on an accident year, policy year, or underwriting year basis using a set of actuarial assumptions and methods.

In accordance with IFRS 17.63, the expected future cash flows of reinsurance contracts held would consider the non-performance of the issuers of the reinsurance contracts. The non-performance includes elements such as delay in payments, default, effect of collateral, and

dispute. The actuary would refer to additional details provided in the PCFRC Reinsurance EN.

IFRS 17.B65 specifies that cash flows within the boundary of an insurance contract are those that relate directly to the fulfilment of the contract, including cash flows for which the entity has discretion over the amount or timing. Examples of such cash flows include claim handling costs (i.e. ULAE), receivables, payables, reinstatement premiums and contingent commissions.

### 3.1 Selecting a payment pattern

Loss payments and estimates of ultimate losses are generally divided into homogeneous business segments for the selection of payment patterns. For this purpose, losses may include loss-related expenses (allocated/external loss adjustment expenses and unallocated/internal loss adjustment expenses), or separate payment patterns may be derived for each of these elements.

Consideration is given to the following:

- The business segments used for the analysis of the liabilities on an undiscounted basis, and which may not correspond to the entity's insurance contract portfolios.
- The payout period (i.e., the length of time over which payments are expected to be made for a segment of claims).
- The existence of a predetermined schedule of payments for a segment of claims.

Selected payment patterns are normally derived from the entity's historical experience. To the extent that an entity's historical experience does not exist (e.g., for a new segment), is not relevant (e.g., changes in claims handling practices) or does not have a reasonable level of credibility (e.g., very low claims volume or significant volatility in claims experience), it may be necessary to evaluate other related or external experience. To the extent possible, such other experience would reflect the expected payment and timing characteristics of the segment under consideration.

Within a segment, payment patterns may vary by accident, policy or underwriting period to reflect changes in legislation, mix of business, reinsurance, or operations (such as claims settlement practices).

Selected payment patterns would reflect the actuary's best estimate with regards to the timing and amount of payments. It may be appropriate to assume that the payment pattern for indemnity and/or external (allocated) claims adjustment expenses also applies to internal (unallocated) claims adjustment expenses.

The payment pattern reflects the timing of expected salvage, subrogation, reinsurance recovery, and loss transfer amounts as applicable. Cash flows would normally be consistent between the reinsurance contracts held and the underlying insurance contracts written on a direct or gross basis, subject to consideration of any significant recovery lag and the treatment of ceding commissions and ceded claims-related expenses. Consequently, gross, ceded, and net payment patterns are likely to be similar for a given line of business if the entity's reinsurance is in the form of quota-share reinsurance.

Expected payment patterns are frequently derived by segment based on a review of the

historical ratios of paid claims to selected ultimate claims at successive maturity ages. Alternatively, the expected payment patterns may be derived directly from the selected paid development factors if such factors are consistent with the selected ultimate claims.

An example of payment pattern is provided in Appendix 1.

Additional considerations specific to the selection of payment patterns for LRC are addressed in the forthcoming draft educational note: Liability for Remaining Coverage for P&C insurance contracts.

### 3.2 Timing of future payments

To determine the expected timing of future payments, the actuary may refer to payment timing studies based on the entity's own data and claims settlement practices. It is common to determine annual, semi-annual, or quarterly payment patterns and assume that payments will, on average, be made in the middle of each period. For example, if the selected payment pattern is annual, the actuary frequently assumes that, on average, payments are made in the middle of each period (i.e., at 6, 18, 30, etc. months) for the purpose of discounting estimates of future cash flows. The mid-period assumption may not be appropriate for books of business with uneven exposures, which may occur when claims are subject to seasonality or for books of business experiencing significant change in volume, or very short payment patterns.

## 4. Determining discount rates

### 4.1 Discount rates

Discount rates are described in IFRS 17.36 as having the following characteristics:

(a) reflect the time value of money, the characteristics of the cash flows and the liquidity characteristics of the insurance contracts;

(b) be consistent with observable current market prices (if any) for financial instruments with cash flows whose characteristics are consistent with those of the insurance contracts, in terms of, for example, timing, currency and liquidity; and

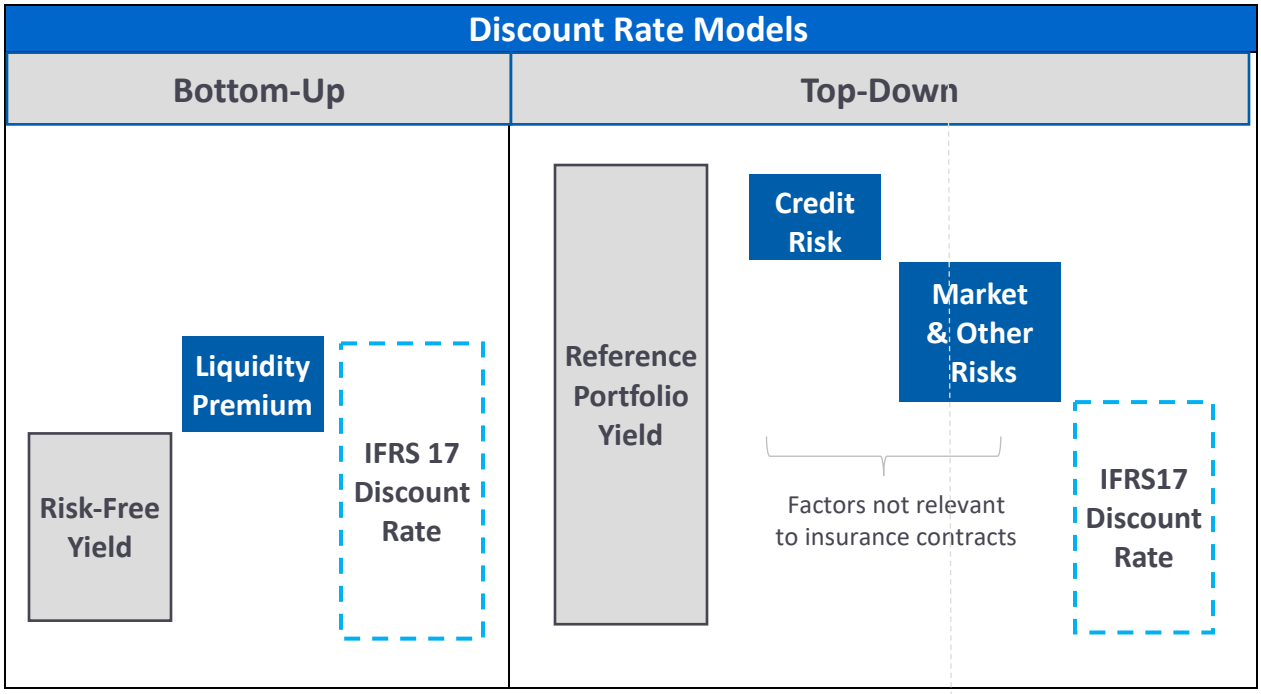
(c) exclude the effect of factors that influence such observable market prices but do not affect the future cash flows of the insurance contracts.

Further considerations are provided in IFRS 17.B72–B85.

IFRS 17 permits an entity to use either of two methods to determine the discount rates to be used for the valuation of insurance contract liabilities (IFRS 17.B80–B81):

- A bottom-up approach whereby a liquid risk-free yield curve is adjusted "to reflect the differences between the liquidity characteristics of the financial instruments that underlie the rates observed in the market and the liquidity characteristics of the insurance contracts."
- A top-down approach whereby the yield to maturity of a reference portfolio of assets is adjusted "to eliminate any factors that are not relevant to insurance contracts." Under this approach, the liquidity characteristics of the reference portfolio would reasonably reflect the liquidity characteristics of the cash flows, but the entity "is not required to adjust the

yield curve for differences in characteristics of the insurance contracts and the reference portfolio.




It is possible for the two approaches to lead to the same discount rate, but they may result in different discount rates due to limitations on the way in which adjustments are calculated. Under IFRS 17, an entity will not be required to reconcile the discount rates determined under the two approaches.

The selection of one approach over the other depends on a number of considerations, such as the characteristics of the liability cash flows (including the duration of claim payments), the availability of suitable data, the investment environment, and how frequently the discount rate is expected to be updated.

Also presented in this draft educational note is an approach to the derivation of liquidity premiums using a top-down approach applied to a reference portfolio. The resulting liquidity premiums are then used in a bottom-up approach.

**IFRS 17 Discount Rate = Risk-Free Rate[1] + Reference Portfolio Liquidity Premium[2]**

1. Risk-free rate as at the valuation date, based on the bottom-up approach.
2. Liquidity premium, derived at a date that may not be the same as the valuation date, and based on the top-down approach.

As indicated by the formula above, this is fundamentally a bottom-up approach, but the use of a reference portfolio to derive a liquidity premium curve incorporates certain important features of a top-down approach. One key advantage of this hybrid approach is that it blends the use of a robust model for estimating liquidity premiums, which can be updated periodically as appropriate (e.g., annually or quarterly), with the use of readily available Canadian risk-free yield curves, which are updated weekly.

IFRS 17 does not specify whether the entity should use a single discount rate or a discount rate curve. This draft educational note describes the derivation of discount rate curves (i.e., rates that vary by duration), although such a curve may be converted into a single equivalent discount rate for calculation purposes or for information only.

### 4.2 Bottom-up approach

The bottom-up approach is illustrated in the figure below:

**Bottom-Up Discount Rate = Risk-Free Rate + Liquidity Premium**

The main advantage of using the bottom-up approach is the availability of risk-free yield curves. The main drawback to this approach is the need to derive a liquidity premium if or when a non-zero liquidity premium is required.

#### 4.2.1 Risk-free rate

Government of Canada (GoC) bonds are considered to be risk-free due to the low probability of default of the Canadian government. Other options are available (such as a swap curve), but these options were not explored as they have limited applicability in Canada.

Potential sources for GoC bond rates include the following publicly-available data:

- Government of Canada zero-coupon bond yield curves (current rates).
- Government of Canada spot yield curves (current rates).
- Forward 1-year Government of Canada rates (forecast rates).

Government of Canada zero-coupon bond rates have the following advantages over the other two sources:

- Timeliness of data, which is updated weekly.
- Availability of the data at a reasonable level of granularity, with maturities ranging from 0.25 years to 30 years in quarterly increments, and thus there is limited need to interpolate or extrapolate values.

#### 4.2.2 Liquidity premium (theoretical)

The following excerpt from Question 3.15 in Chapter 3 (Discount Rates) of the IFRS 17 Application EN pertains to the quantification of the liquidity characteristics of insurance contracts:

> The adjustment to reflect the liquidity characteristics of the insurance contracts has been broadly termed the illiquidity premium. Highly liquid insurance contracts would have a low (or even no) illiquidity premium while very illiquid contracts would have a higher illiquidity premium.
>
> Data relating to illiquidity premium of insurance contracts is generally not directly available in the market. Looking beyond insurance contracts, market prices for liabilities

where the issuer of debt has the possibility to redeem the debt early are also very limited.

A theoretical approach to determine the illiquidity premium is to assess possible replicating portfolios.

The use of replicating portfolios is theoretically feasible but generally impractical due to the requirement to "exactly match the insurance contract cash flows in all scenarios." Thus, replicating portfolios are not considered in this draft educational note.

The following practical estimation approaches for estimating illiquidity premiums are described in Question 3.15 in the IFRS 17 Application EN:

- Using a reference portfolio and determining its illiquidity premium using top-down techniques.
- Comparing yields on illiquid to liquid assets, both with same or similar degree of credit risk.

The first of these approaches (i.e., use of a reference portfolio) was selected for illustrative purposes in Appendix 2. The use of a reference portfolio to derive liquidity premiums is described later in this draft educational note.

### 4.3 Top-down approach

The top-down approach is illustrated in the formula below:

**Top-Down Discount Rate = Reference Portfolio Rate – Credit Risk, Market Risk & Other Adjustments**

The main advantage of the top-down approach is that it does not require the explicit derivation of a liquidity premium. A disadvantage of this approach is the potential complexity of the derivation of a reference portfolio rate and applicable adjustments (such as a credit risk adjustment), particularly if the discount rate is expected to be updated frequently.

#### 4.3.1 Selection of a reference portfolio

As described in Question 3.18 in the IFRS 17 Application EN:

> An entity may determine appropriate discount rates for insurance contracts using a top-down approach (paragraph B81). Under this approach, discount rates are based on current market rates of return of a reference portfolio of assets which are adjusted to remove risk characteristics embedded within the reference portfolio but that are not inherent in insurance contracts. These adjustments are discussed in Questions 3.19 and 3.20.
>
> IFRS 17 does not require that adjustments to the yield curve be made for residual differences in liquidity characteristics of the insurance contracts and the reference portfolio. Nonetheless, an entity may still adjust the yield curve for these differences, as discussed in Questions 3.14–3.17.

Such adjustments would be appropriate if the liquidity characteristics of the assets in the chosen reference portfolio are not reasonably consistent with the liquidity characteristics of the insurance contracts.

Reference portfolios are key to the top-down approach. If properly adjusted for all risks that are not inherently part of insurance contracts, then the remaining difference relative to a risk-free rate is largely attributable to the asset liquidity premium.

As indicated in IFRS 17.B85, IFRS 17 does not specify restrictions on the reference portfolio of assets used in applying IFRS 17.B81 (top-down approach). However, fewer adjustments would be required to eliminate factors that are not relevant to the insurance contracts when the reference portfolio of assets has similar characteristics.

The reference portfolio may be based on actual assets held by the entity or on a theoretical portfolio of assets.

Factors that may differ between a reference portfolio and insurance contracts include:

- liquidity
- investment risk (e.g., credit risk, market risk)
- timing
- currency risk

Liquidity risk and investment risk are addressed in Sections 4.5 and 4.4, respectively.

In selecting the reference portfolio, the actuary would assess the consistency of the timing of payments between the assets in the reference portfolio and the insurance contract liabilities. For example, if the reference portfolio includes bonds with coupons, the actuary may make adjustments to reflect the timing of both the coupon payments and principal repayment if such adjustment is expected to materially affect the selection of discount rates. Potential approaches include:

- considering the duration (rather than the time to maturity) of the securities in the reference portfolio; and
- constructing a reference portfolio that explicitly considers both coupon payments and principal repayments, rather than a simplified approach based only on principal repayments.

Currency risk might be addressed by selecting a reference portfolio made up of investments denominated in the same currency as the insurance contracts.

## 4.4 Reference portfolio discount rate

### 4.4.1 Credit risk adjustment

For debt instruments, the effect of credit risk (if non-trivial) is eliminated from the total bond yield. According to Question 3.19 in the IFRS 17 Application EN, the effect of credit risk usually comprises two components: the expected credit losses and the unexpected credit losses (i.e.,

compensation for bearing that risk). The credit risk adjustment includes default risk and downgrade risk.

A bond default occurs when the bond issuer fails to make an interest or principal payment within the specified period. In the case of default, the bondholders will be able to recover part of the value of the bond.

In a downgrade scenario, a bond that is downgraded to a level below investment grade (or other selected threshold) may result in the disposition of the bond below its current value.

There is a wide range of practice to estimate the required deduction for credit risk inherent in bond yields. Observed practices include:

- market-based approach;
- structural model techniques; and
- historical distribution techniques.

Note that several approaches used to estimate the deduction for credit risk are complex, particularly with regards to the unexpected credit risk. Potential approaches for the derivation of the unexpected default risk include:

- default risk at a probability level greater than the mean (e.g., 90th percentile); and
- default risk derived as a multiple of the expected default risk (e.g., twice the expected value).

Examples of application are presented in Appendix 2.

Similarly, unexpected downgrade risk (if not assessed as part of the default risk) may be incorporated by increasing the downgrade risk adjustment by a selected margin (e.g., five basis points).

### 4.4.2 Market risk and other adjustments

As per IFRS 17.B81, "an entity shall adjust that (reference portfolio) yield curve to eliminate any factors that are not relevant to the insurance contracts." A market risk adjustment is generally not required if the reference portfolio is comprised solely of bonds.

IFRS 17 does not require that adjustments to the yield curve be made for residual differences in liquidity characteristics of the insurance contracts and the reference portfolio. Nonetheless, an entity may adjust the yield curve for those differences.

## 4.5 Liquidity premium based on reference portfolio

A combined approach is illustrated in the equation below:

**IFRS 17 Discount Rate = Risk-Free Rate[1] + Reference Portfolio Liquidity Premium[2]**

1. Risk-free rate as at the valuation date, based on the bottom-up approach.
2. Liquidity premium, derived at the reference portfolio date, a date that may not be the same as the valuation date, and based on the top-down approach.

Risk-free rates as at the valuation date are comparable to those at the reference portfolio date, which are used to derive the liquidity premium as described below.

After calculating the yield to maturity on the reference portfolio and the corresponding credit risk adjustments, the liquidity premium is calculated as shown below:

**Reference Portfolio Liquidity Premium = Top-Down Discount Rate – Risk-Free Rate**

The liquidity premium used in the rates to discount the insurance contract liabilities may differ from the liquidity premium derived from the reference portfolio. As described in Question 3.15 in the IFRS 17 Application EN:

> … What follows is an example of a simple method used to relate the illiquidity premium of insurance contracts to the asset portfolios:
>
> > *Assume liability illiquidity premium = r * asset portfolio illiquidity premium + constant illiquidity premium difference* where the constant term and multiplicative factor (r) is set based on either judgment or data if any is available. In the selection of the factor differing market environments may be taken into consideration. For example, using a high multiplicative factor (r) and a constant = 0 may not produce a convincing result during a credit crisis. It would be difficult to justify insurance contracts having a higher illiquidity premium than the return on assets available for investment earning the illiquidity premium. This, however, is not a directly relevant factor in setting the illiquidity premium level.
>
> The above approach is based on a top-down approach. For those using bottom-up there may be a discernible relationship between the level of the illiquidity premium and other market data such as the level of risk-free rates and/or the level of credit spreads. For example, there may be a different illiquidity premium in a 10% rate environment than in a 5% environment. However, if analysis showed the same level of credit spreads in these disparate environments then the level of illiquidity premiums in these environments might be the same.

The combination of the multiplicative factor (r) and the additive constant defines the relationship between the liquidity of the reference portfolio assets and the liquidity of the insurance contracts. In the illustrative example in Appendix 2, the reference portfolio yield is adjusted to remove the estimated credit risk, and the remaining spread over risk-free rates is considered to be attributable to the liquidity premium. In this example, no adjustments are considered necessary. Accordingly, *r* is set to 100% and the *constant* is set to 0.

Another way of presenting the relationship between the liquidity of the reference portfolio assets and the liquidity of the insurance contracts is as suggested in the draft educational note *IFRS 17 Discount Rates for Life and Health Insurance Contracts* (June 2020). In this case, the liquidity premium is expressed as a fixed percentage of asset reference portfolio spread over risk-free rates and an additional constant adjustment to reflect the difference between the liquidity characteristics of the insurance contract and the asset reference portfolio.

$$Liquidity\ Premium = r * asset\ reference\ portfolio\ spread\ over\ risk\ free + \ constant$$

The multiplicative factor r represents the portion of the asset spread that relates to the liquidity premium.

The constant in the formula is to account for the liquidity difference between assets in the reference portfolio and the insurance contracts. The application of the constant adjustment depends on the combination of reference portfolio and the liquidity characteristics of the insurance contracts.

### 4.6 Liquidity of P&C insurance contract liabilities

IFRS 17.36 states that the discount rates applied shall reflect the liquidity characteristics of the insurance contracts.

The following guidance is from Question 3.14 of the IFRS 17 Application EN:

> In order to understand the nature of insurance contract liquidity characteristics one may consider the liquidity characteristics of other financial instruments: in the context of fixed income financial instruments, liquidity is the ability to convert the asset into cash or extinguish the liability on demand. The liquidity arises from either call or put options embedded into the instrument or the marketability of the instrument.
>
> BC193 specifically draws the parallel between insurance contracts and fixed income financial instruments and suggests that liquidity characteristics of insurance contracts be viewed from the perspective of the features embedded within the contract. This view is also echoed in the IAA Discount Rate Monograph which, on page 38 of section IV, states: *the liquidity of a liability is a function of the basic contract provisions, and especially any options that might exist for the policyholder that would impact the uncertainty regarding the amount and timing of payments.*
>
> This answer addresses the liquidity characteristics of insurance contracts from the perspective of the contract's features. Some practitioners ask if the liquidity characteristics of insurance contracts should be assessed from the insurer's perspective. The motivation of this view is BC194 which suggests that the motivation of including a liquidity premium is the entity's ability, or lack thereof, to sell / put the contract. The focus of IFRS 17 in general is on the insurance contract features and as such this answer explores liquidity from the perspective of the contract's features.
>
> Note that this answer focuses on qualitative assessments of insurance contact liquidity. See response to Question 3.15 for a discussion on the quantitative assessment of illiquidity premium.
>
> Contract features that may influence the liquidity of an insurance contract include:
>
> - **Exit costs**: all else being equal, a contract with exit costs (e.g., surrender charges / penalties) is likely to be more illiquid than one without. Note exit is contemplated as voluntary exit / cancellation of contract and occurrence of the insured event is not considered a contract exit, as contemplated in this response.

- **Inherent value / value build-up**: If a contract's pricing / construction is such that there is negligible / no inherent value then, other than any exit costs, it is likely to be considered liquid. If on exit of a contract there is:
  - little inherent value in the contract and there are no costs to exit the contract then the contract could be considered to be liquid;
  - little inherent value in the contract and there are costs to exit the contract then the contract could be considered to be illiquid.

  **For example, yearly renewable general insurance contracts, whose design builds negligible value and are without exit costs, are likely to be considered liquid. [emphasis added]**

  For contracts with no cash value, increasing risk and level premium payment, longer contract boundaries are potentially less liquid than contracts with shorter boundaries as the extended boundary potentially leads to greater inherent value / value build-up. To illustrate this a twenty-year term insurance contract could be viewed as less liquid than a two-year term insurance contract.

- **Exit value**: all else being equal, a contract where upon exit all / a large part of the value build-up is paid out is more liquid than one that pays out none or a small part of the value build-up. If on exit of a contract there is:
  - value in the contract and the policyholder receives all / a large part of the value of the contract, then the contract may be considered to be liquid.
  - value in the contract and the policyholder receives no / a small part of the value of the contract, then the contract may be considered to be illiquid.

  **Liability for incurred claims might be considered illiquid as there is no potential avenue for the policyholder to obtain the exit value yet there is tangible inherent value (else a claim would not have been made.) [emphasis added]**

The assessment of liquidity of P&C insurance contract liabilities is subject to judgment in the interpretation of IFRS 17 and related guidance. Guidance in this regard is evolving, and changes in that guidance resulting from new interpretations of IFRS 17 may lead to revisions to the assessments described below.

### 4.6.1 Insurance contracts and reinsurance contracts issued

For the purposes of this draft educational note, the LRC and LIC for particular products are identified as either "liquid" or "illiquid." An actuary may determine that it is appropriate to consider "degrees" of liquidity. The "perceived liquidity" is subject to consideration of specific contract provisions that may affect the liquidity of the LRC.

The following table describes the categorization of liquidity of the insurance contract of LRC and LIC. For each category, there are examples of non-standard P&C products that may require special consideration. Furthermore, an actuary would consider specific contract provisions that may have a bearing on the liquidity of insurance contract liabilities.

| Liquidity of Canadian P&C Insurance Contract Liabilities | | |
|---|---|---|
| | **LRC** | **LIC** |
| **Liquidity of most standard P&C products** | Liquid | Illiquid |
| **Basis for varying liquidity** | Ability of policyholder to cancel policy before expiry date and to receive value without significant exit costs. | Ability for the policyholder to obtain the exit value in advance of "normal" payment dates. |
| **Examples of non-standard** | Title insurance<br>Warranty insurance | Long-term disability claims for which the claimant has an option to receive a lump sum payment. |

The following table contains descriptions of certain non-standard P&C products that may require special consideration in the context of the valuation of the LRC.

| Non-Standard Canadian P&C Insurance Contracts (LRC) | | |
|---|---|---|
| **P&C Product** | **Description** | **Perceived Liquidity** |
| Title | • Lump-sum premium earned at issuance.<br>• No cancellation options available that would result in any return of premium, as the policyholder is already beneficiary of the title search that was used to determine the status of the title. | Illiquid |
| Mortgage | • Lump-sum premium at the issuance of the mortgage.<br>• If mortgage is pre-paid or discharged, policyholder is not entitled to any premium refund. | Illiquid |
| Contract surety | • Policyholder cannot cancel the policy because the policyholder is not the beneficiary of the policy.<br>• The contract expires after the completion of the project (or after completion of all projects specified in the policy). | Illiquid |
| Fidelity and fiduciary surety | • In most cases, the policy is mandatory but the policyholder may cancel the policy if the obligation ends or if the policyholder finds a more attractive policy. | Liquid |
| Warranty | • In most provinces, contracts are cancellable, and the policyholder would be entitled to a pro-rated refund.<br>• In some provinces, the contract might not be cancellable, in which case it would be considered illiquid. | Liquid<br><br>Illiquid |

### 4.6.2 Liquidity of reinsurance contracts held

The general concepts outlined above in respect of insurance contracts also apply to reinsurance contracts held (ceded) and reinsurance contracts issued (assumed).

For a group of reinsurance contracts or treaties, the liquidity of the LRC is evaluated on the basis of the ability of the purchaser of the reinsurance to cancel the reinsurance contract before its expiry date and to receive value. Most reinsurance contracts have a one-year term with limited provision for early cancellation by either party. Treaty-specific cancellation provisions are considered for the purposes of assessing liquidity.

In most cases, the LIC for a group of reinsurance contracts is likely considered illiquid based on the inability of the purchaser of reinsurance to influence the timing of claim payments.

### 4.6.3 Single liquidity premium

According to Chapter 3 (Question 3.16) in the IFRS 17 Application EN:

> Insurance contracts exhibiting different features may have different exit costs, inherent value and/or exit value. As such, products are expected to have different illiquidity premiums. Products within the same portfolio, however, may have similar illiquidity premiums/characteristics since they are similar risks. An entity may elect to use a single average illiquidity term structure across products within a given portfolio.

By extension, it is reasonable for an entity to elect to use a single weighted average liquidity term structure (i.e., liquidity premium curve) for the LRC and LIC of a given portfolio.

P&C actuaries generally assess the LIC and LRC separately for a given portfolio and for its underlying groups. Furthermore, for P&C contracts, the unexpired portion of the contracts and the incurred claims generally exhibit different liquidity characteristics: the first being generally liquid and the second being illiquid. Consequently, it is intuitive to consider that the liquidity premium or that the yield curve could be different to discount the LIC or the LRC.

However, the IFRS 17 standard does not preclude the actuary from using a single liquidity premium or a single yield curve for both the LIC and LRC for a given portfolio. IFRS 17 refers to the liquidity characteristics of the insurance contracts and not of the liquidity characteristics of the LIC or of the LRC.

Consequently, the liquidity characteristics of P&C contracts for a given portfolio could be seen as the combination of:

- a portion that is liquid (unexpired portion and contracts with no claims); and
- a portion that is illiquid (expired portion of the contracts with claims incurred).

An approach with a single liquidity curve applied to both LIC and LRC could provide the following benefits:

- Fewer yield curves to manage. Generally, it is operationally simpler to reduce the number of calculations. This could reduce the number of curves to manage by half.
- Single view of the profitability of portfolios. The valuation of the fulfilment cash flows of the portfolios and groups would be more consistent when transitioning from LRC to LIC. This is especially true for long-tail coverages like auto accident benefits and auto bodily injury.

The unwinding of the discount could differ from the investment results of the investments supporting the LIC.

### 4.7 Duration of the observable market for discount rates

The observable market in Canada is 30 years. For additional details, please refer to Section 1 within Chapter 1 of the CLIFR draft educational note: *IFRS 17 Discount Rates for Life and Health Insurance Contracts*.

### 4.8 Long-term discount rate (unobservable ultimate rate)

To determine discounting assumptions beyond the observable period, please refer to Section 2 within Chapter 1 of the CLIFR draft Educational Note: *IFRS 17 Discount Rates for Life and Health Insurance Contracts*.

## 5. Reference curves

### 5.1 Introduction

The language related to discount rates in the IFRS 17 standard is brief and principles-based. The principles-based nature of the standards could lead to a wide range of practice amongst actuaries, particularly when setting discount rates beyond the observable period. Consequently, CLIFR and PCFRC have created parameters for a set of reference curves to facilitate comparison among entities of discount curves, particularly in the unobservable period.

In some instances, it is expected that the actuary would compare the present value of the estimates of future cash flows obtained using the selected discount curve with the present value obtained when using the reference curve parameters for the unobservable period. Most P&C cash flows are within the observable period, and therefore this comparison would not be required unless there are cash flows beyond the observable period. When there are estimates of future cash flows in the unobservable period, it is expected that the actuary would compare:

- The present value of the estimates of future cash flows obtained using the company's own curve; and
- The present value obtained when using the reference curve parameters for the unobservable period, and the company's own curve parameters in the observable period.

This chapter presents reference curves for insurance contracts that are deemed to be liquid and illiquid and outlines how these curves are constructed in the observable period and beyond the observable period.

This draft educational note only defines reference curves for liquid and illiquid cash flows. An entity may have grouped its insurance contracts in more than two liquidity categories. To the extent an entity has more than two discount curves, the actuary would use judgment to derive the reference curve that would apply to the insurance contracts that fall between the liquid and illiquid categories.

### 5.2 Defining the reference curve

In this section, the reference curves are defined for liquid and illiquid insurance contracts based on the following parameters:

- The length of the observable period.
- The risk-free rate and liquidity premiums for the observable period.
- The ultimate risk-free rate, the ultimate liquidity premiums and the approach used to interpolate between the last observable point and the ultimate point.

#### 5.2.1 Defining the reference curve in the observable period

In the observable period, for terms up to 30 years, the risk-free rates are derived from the GoC debt securities.

The last observable point is set at the 30-year term based on GoC debt securities and the findings described in Chapter 1 of CLIFR's draft educational note: *IFRS 17 Discount Rates for Life and Health Insurance Contracts*. The actuary would not deviate from the 30-year observable period for insurance contracts sold in Canada and in Canadian currency.

The reference curve liquidity premiums for liquid insurance contracts (e.g., amounts on deposit, or LRC for most P&C products) are set using provincial bonds as a reference portfolio and a credit risk adjustment. For each term up to 30 years, the liquidity premium is defined as the interest rate spread of the portfolio, adjusted for credit risk, over the risk-free rate derived from the GoC debt securities. This is approximately equivalent to a liquidity premium equal to 90% of the provincial bonds spread.

The reference curve liquidity premiums for illiquid insurance contract liabilities (e.g. Term 100, or LIC for most P&C products) are set using Canadian investment grade corporate bonds (those with credit ratings of no less than BBB) as a reference portfolio, adjusted with a constant to reflect the fact that these insurance contracts are less liquid than corporate bonds, and a credit risk adjustment. For each term up to 30 years, the liquidity premium is defined as 0.50% + 75% of the Canadian investment grade bonds spread over the risk-free rate derived from the GoC debt securities.

The resulting reference curves in the observable period are therefore:

a. Liquid curve: Risk-free rate + 90% of provincial bonds spread

b. Illiquid curve: Risk-free rate + 0.50% + 75% of Canadian investment grade bonds spread

#### 5.2.2 Defining the reference curve in the unobservable period

Guidance on the reference curve in the unobservable period is provided in Section 2 within Chapter 2 of the CLIFR draft educational note: *IFRS 17 Discount Rates for Life and Health Insurance Contracts*.

### 5.3 Other considerations

#### 5.3.1 Insurance finance expense versus investment income

There could be cases where the expected return on the assets of the insurer is lower than the discount rate applied to the estimates of future cash flows which would lead to the investment income for the assets supporting the insurance contracts being lower than the insurance finance expense. The actuary would understand the implications of setting discount rates that create a negative bias in investment results.

### 5.4 Suggested disclosures in the Appointed Actuary's report

The discount curve applied to the estimates of future cash flows is a significant assumption impacting many aspects of the financial statements. The discount curve will be a driver of the fulfilment cash flows, the CSM at initial recognition and the insurance finance expense. As a result, it is recommended that the actuary include information in the Appointed Actuary's report to outline the methodology used to develop the discount curves for all insurance contracts in-force.

#### 5.4.1 Discount curves within the observable period

For discount curves that do not extend beyond the observable period, the information provided would include a description of the methodology used to set the discount curves for all currencies, and would cover the points outlined below:

1. The last observable point.
2. The derivation of the liquidity premiums in the observable period.
3. The derivation of reference curves used for liabilities, if any, that fall between the liquid and illiquid categories described in this draft educational note.
4. For insurance contracts issued in Canadian currency, it is recommended that the actuary comment in general terms on the extent to which the discount curve differs from the reference curve described in Section 5.2.1. A quantitative comparison is not required.

#### 5.4.2 Discount curves beyond the observable period

Recommended disclosures that relate to discount rates in the unobservable period are outlined in Section 4 within Chapter 2 of the CLIFR draft educational note: *IFRS 17 Discount Rates for Life and Health Insurance Contracts*.

## 6. Discounting the estimates of future cash flows

In accordance with IFRS 17.36, discount rates are expected to vary with the timing of the cash flows. The use of a yield curve rather than a single discount rate is one way to satisfy this requirement. Using a yield curve, the expected future cash flows at a given payment maturity are discounted using the rate from the yield curve with the corresponding maturity.

To discount the estimates of future cash flows, four assumptions are required:

- The undiscounted liability amount (Section 3).
- The expected payment pattern of the undiscounted liability amount (Section 3.1).

- The expected timing of future payments (Section 3.2).
- The yield curve consistent with the characteristics of future cash flows (Section 4).

## 7. Applying the risk adjustment and determining the fulfilment cash flows

The actuary is responsible for including a risk adjustment in the fulfilment cash flows. The risk adjustment is determined by the entity in accordance with IFRS 17. 37. See the PCFRC Risk Adjustment EN for further details.

The fulfilment cash flows are calculated as follows:

Fulfilment cash flows = Discounted estimates of future cash flows + Risk adjustment

## 8. Locked-in yield curve

Locked-in yield curves refer to yield curves determined at the initial recognition of the group of contracts. Under IFRS 17, locked-in yield curves are used for three purposes:

- Adjusting and accreting interest on the CSM, which is a component of the LRC when the GMA is used.
- Systematic allocation of insurance finance expense to the income statement if the entity chooses to disaggregate the insurance finance income or expense between profit and loss and other comprehensive income (OCI).
- The entity uses the PAA and there is a significant financing component, as defined in IFRS 15 paragraphs 60-61.

In the context of financial reporting for P&C insurance contracts, locked-in yield curves are typically not used unless:

- the entity uses the GMA to determine the LRC for some or all groups of insurance contracts; or
- the entity elects the OCI option for some or all portfolios of insurance contracts.

Locked-in yield curves are determined in the same manner as current yield curves as described in Section 4.

In accordance with IFRS 17.B72, if the insurance contract liabilities for the group are initially measured using the GMA, the locked-in yield curves are determined at the date of initial recognition of the group of contracts. Based on Question 3.41 of the IFRS 17 Application EN, three approaches, amongst others, may be used to determine the locked-in yield curves for a group of contracts:

- Determine the locked-in yield curve for each contract within the group based on each contract's respective issue date and carry calculations at the contract level.
- Determine the locked-in yield curve at the date of initial recognition of the group of contracts (i.e., at the issue date of the first contract included in the group) and carry calculations at the group level.

- Determine the locked-in yield curve using a weighted average discount curve based on the issue dates of the various contracts in the group and carry calculations at the group level.

Based on IFRS 17.B72(e)(iii), for groups of contracts applying the PAA, the locked-in yield curves used for the OCI option are determined at the date of the incurred claims. It may be reasonable for the actuary to determine the locked-in yield curve for the group at the average date of incurred claims for the group. The actuary would consider the reasonableness of this assumption based on the expected seasonality of claims associated with contracts in the group as well as the economic environment during the locked-in period. For example, if interest rates vary significantly during the locked-in period, the yield curve as at the average date may not be appropriate.

## 9. Insurance finance expense

Under IFRS 17, incurred claims and directly attributable expenses create insurance expenses that are accounted for in two separate lines of the income statement:

- The insurance service expense.
- The insurance finance expense.

IFRS 17.87(a) and (b) state:

> Insurance finance income or expenses comprises the change in the carrying amount of the group of insurance contracts arising from:
>
> (a) the effect of the time value of money and changes in the time value of money; and
>
> (b) the effect of financial risk and changes in financial risk; (…)

In this draft educational note:

- The "effect of the time value of money" is referred to as the unwinding of the discount and represents the release of the effect of discounting at a subsequent measurement date due to the passage of time.
- The "effect of changes in the time value of money" is referred to as the effect of changes in discounting assumptions and represents the variation in the liability due to changes in the yield curve relative to prior expectations.

IFRS 17 does not require these two components to be calculated separately, however some companies may have an internal requirement to disclose the effect of changes in the discount curve (market yield adjustment). Additionally, it may be easier to understand the insurance finance expense as being composed of unwinding and effect of changes in discounting assumptions.

## 10. Unwinding of discount

The release of the effect of discounting during a reporting period can be conceptualized as the difference between discounting the cash flows to the beginning of the period and discounting

to the end of the period. Equivalently, the unwinding can be calculated by applying unwinding rates to the beginning of period present value cash flows.

The unwinding of discount does not include the effect of changes in discounting assumptions, however discounting assumptions at a given reporting date may include current expectations about how the discount curve will change over time. Three possible methods for calculating unwinding are presented below, each corresponding to a different a priori assumption about future discount rates.

### 10.1 Constant yield curve

This method calculates the unwinding expense using the same discount curve at the beginning and end of the period. It corresponds to the a priori assumption that the discount curve will remain the same at the end of the period.

The equivalent unwinding rates are the forward rates implied by the discount curve (see forward rate formula in Section 2). Calculating the unwinding expense by multiplying the forward rates by the beginning of period discounted cash flows will produce the same result as calculating the unwinding expense as the difference between the cash flows discounted to the beginning and end of the period.

| (1) Payment year | 2021 | 2022 | 2023 | 2024 | 2025 | Total |
|---|---|---|---|---|---|---|
| (2) Undiscounted cash flows (*) | 100 | 100 | 100 | 100 | 100 | 500 |
| (3) Opening discount curve | 1.2% | 1.8% | 2.3% | 2.5% | 2.7% | |
| (4) A priori ending discount curve | n/a | 1.2% | 1.8% | 2.3% | 2.5% | |
| (5) Opening discounted cash flows | 98.81 | 96.49 | 93.41 | 90.60 | 87.53 | 466.84 |
| (6) A priori ending discounted cash flows | 100.00 | 98.81 | 96.49 | 93.41 | 90.60 | 479.31 |
| (7) Unwinding expense = (6) - (5) | 1.19 | 2.32 | 3.09 | 2.81 | 3.07 | 12.47 |
| (8) Forward rates | 1.2% | 2.4% | 3.3% | 3.1% | 3.5% | |
| (9) Unwinding rates = (8) | 1.2% | 2.4% | 3.3% | 3.1% | 3.5% | |
| (10) Unwinding expense = (5) * (9) | 1.19 | 2.32 | 3.09 | 2.81 | 3.07 | 12.47 |

Notes:
(*) Assuming end of year cash flows

(5) = (2) discounted to beginning of 2021 using (3)

(6) = (2) discounted to beginning of 2022 using (4)

### 10.2 Unwinding using spot rates

This method calculates the unwinding expense using an end of period discount curve that is equal to the beginning discount curve shifted by one period. That is, the 2-year spot rate becomes the 1-year spot rate, the 3-year spot rate becomes the 2-year spot rate, and so on. The equivalent unwinding rates are the beginning of period spot rates.

| (1) Time | **2021** | **2022** | **2023** | **2024** | **2025** | **Total** |
|---|---|---|---|---|---|---|
| (2) Undiscounted cash flows (*) | 100 | 100 | 100 | 100 | 100 | 500 |
| (3) Opening discount curve | 1.2% | 1.8% | 2.3% | 2.5% | 2.7% | |
| (4) A priori ending discount curve | n/a | 1.8% | 2.3% | 2.5% | 2.7% | |
| (5) Opening discounted cash flows | 98.81 | 96.49 | 93.41 | 90.60 | 87.53 | 466.84 |
| (6) A priori ending discounted cash flows* | 100.00 | 98.23 | 95.55 | 92.86 | 89.89 | 476.54 |
| (7) Unwinding expense = (6) - (5) | 1.19 | 1.74 | 2.15 | 2.26 | 2.36 | 9.70 |
| (8) Unwinding rates = (3) | 1.2% | 1.8% | 2.3% | 2.5% | 2.7% | |
| (9) Unwinding expense = (5) * (8) | 1.19 | 1.74 | 2.15 | 2.26 | 2.36 | 9.70 |

Notes:
(*) Assuming end of year cash flows
(5) = (2) discounted to beginning of 2021 using (3)
(6) = (2) discounted to beginning of 2022 using (4)

### 10.3 Expectations hypothesis

The expectations hypothesis proposes that the term structure of interest rates is solely determined by market expectations of future interest rate changes. Under the expectations hypothesis, the forward rates implied by the current yield curve represent the sequence of expected future single period spot rates.

This method calculates the unwinding expense using the end of period discount curve that is predicted by the expectations hypothesis. The equivalent unwinding rate is the one-period spot rate (i.e., one-year spot rate for annual reporting frequency, one-month spot rate for monthly reporting). Formulas for calculating the a priori ending discount curve can be found in Appendix 6 (Income Statement Calculations) in the excel file of illustrative examples.

| (1) Time | **2021** | **2022** | **2023** | **2024** | **2025** | **Total** |
|---|---|---|---|---|---|---|
| (2) Undiscounted cash flows | 100 | 100 | 100 | 100 | 100 | 500 |
| (3) Opening discount curve | 1.2% | 1.8% | 2.3% | 2.5% | 2.7% | |
| (4) A priori ending discount curve | n/a | 2.4% | 2.9% | 2.9% | 3.1% | |
| (5) Opening discounted cash flows | 98.81 | 96.49 | 93.41 | 90.60 | 87.53 | 466.84 |
| (6) A priori ending discounted cash flows* | 100.00 | 97.65 | 94.53 | 91.68 | 88.58 | 472.44 |
| (7) Unwinding expense = (6) - (5) | 1.19 | 1.16 | 1.12 | 1.09 | 1.05 | 5.60 |
| (8) Unwinding rates = (3) col. 1 | 1.2% | 1.2% | 1.2% | 1.2% | 1.2% | |
| (9) Unwinding expense = (5) * (8) | 1.19 | 1.16 | 1.12 | 1.09 | 1.05 | 5.60 |

Notes:
(*) Assuming end of year cash flows
(5) = (2) discounted to beginning of 2021 using (3)
(6) = (2) discounted to beginning of 2022 using (4)

## 11. Effect of changes in discounting assumptions

The effect of changes in discounting assumptions in the insurance finance income or expense encompasses changes in the yield curve relative to a priori assumptions, but not changes in payments patterns and changes in risk adjustment (which belong in the insurance service expense).

The calculation of the effect of changes in discounting assumptions would be consistent with the unwinding methodology used.

An illustrative calculation is provided in Appendix 6.

## 12. Financial statement presentation

### 12.1 Statement of financial position

The LIC presented in the statement of financial position is calculated using current discount rates. For each portfolio of contracts, the combined LIC and LRC are calculated. The statement of financial position separately presents:

- portfolios of insurance contracts issued that are assets;
- portfolios of insurance contracts issued that are liabilities;
- portfolios of reinsurance contracts held that are assets; and
- portfolios of reinsurance contracts held that are liabilities.

In addition, the entity establishes an accounting policy that addresses the OCI option in accordance with IFRS 17.88:

> […] an entity shall make an accounting policy choice between:
>
> (a) including insurance finance income or expenses for the period in profit or loss; or
>
> (b) disaggregating insurance finance income or expenses for the period to include in profit or loss an amount determined by a systematic allocation of the expected total insurance finance income or expenses over the duration of the group of contracts […]

Based on IFRS 17.B130, if the entity elects the OCI option, the accumulated other comprehensive income (AOCI) includes the difference between the fulfilment cash flows calculated at current rates and the provision calculated at locked-in rates. There are no amounts related to insurance contracts in AOCI if the entity does not elect the OCI option.

### 12.2 Statement of comprehensive income

Total portion of the insurance service expenses relating to the LIC are calculated as follows:

Claim and expense payments in the period
+ LIC at the end of the period
- LIC at the beginning of the period

For financial reporting and note disclosure purposes, total incurred claims and expenses are broken down into several components, as follows:

Insurance service expense (P&L)
+ Insurance finance expense (P&L)
+ Insurance finance expense (OCI)

The change in the discounted cash flows from the beginning to the end of the period can be conceptualized as coming from the following sources:

1. Discounting to the end of the period instead of the beginning (unwinding of discount).
2. Update of the discount curve (effect of changes in discounting assumptions).
3. Update of the cash flow assumptions (insurance service expense).

The various components of incurred claims are affected by the order of the calculation. While IFRS 17 does not prescribe an order of calculation, the above order is thought to be consistent with the requirements of IFRS 17. In particular, if the cash flows are updated first, the amounts incurred in the current period would need to be excluded from insurance finance calculations. This is because these amounts are measured for the first time at the current report date using current discount rates, so they are not impacted by the change in discount rate or passage of time.

The complexity of the calculation of the insurance service and insurance finance expense may depend on the accounting requirements tied to the entity's accounting policy choices. As described in Section 9, two accounting policy choices that affect the calculations are the measurement approach selected for LRC (i.e., the GMA or the PAA) and the OCI option.

The following tables summarize three possible approaches for calculating the breakdown of incurred claims and expenses for financial reporting, depending on the accounting policy choices made by the entity. The approaches are ordered in increasing order of complexity.

| | **PAA for LRC** | **GMA for LRC** |
|---|---|---|
| **OCI option not elected** | Approach #1 | Approach #3 |
| **OCI option elected** | Approach #2 | Approach #3 |

The following terminology is used in the next section:

- AOCI(0) = AOCI at the beginning of the period
- AOCI(1) = AOCI at the end of the period
- PVCF($CF_i$, $PV_i$, $DC_i$) = present value of the estimates of future cash flows
    - CF = cash flow assumptions as at beginning or end of period (subscript 0 or 1)
    - PV = present value as at beginning or end of period (subscript 0 or 1)
    - DC = discount curve
        - Subscript 0 or 1 indicates beginning or end of period respectively
        - Subscript RF indicates a rolled-forward curve, i.e., the a priori predicted curve for the end of period using beginning of period discounting assumptions
        - Subscript L0 indicates a locked-in curve at the beginning of the period; L1 indicates the locked-in curve rolled-forward to the end of the period

- RA = risk adjustment

**Statement of Financial Position at the End of the Period**

| **Element** | **Approach #1**<br>**No OCI and PAA for LRC** | **Approach #2**<br>**OCI and PAA for LRC** | **Approach #3**<br>**GMA for LRC** |
|---|---|---|---|
| LIC | $PVCF(CF_1, PV_1, DC_1) + RA$ | $PVCF(CF_1, PV_1, DC_1) + RA$ | $PVCF(CF_1, PV_1, DC_1) + RA$ |
| AOCI | 0 | $PVCF(CF_1, PV_1, DC_1) - PVCF(CF_1, PV_1, DC_{L1})$ | $PVCF(CF_1, PV_1, DC_1) - PVCF(CF_1, PV_1, DC_{L1})$ |

**Statement of Comprehensive Income for the Period**

| **Element** | **Approach #1**<br>**No OCI and PAA for LRC** | **Approach #2**<br>**OCI and PAA for LRC** | **Approach #3**<br>**GMA for LRC** |
|---|---|---|---|
| Insurance finance expense for unwinding of discount (P&L) | PVCF($CF_0$, $PV_1$, $DC_{RF}$) - PVCF($CF_0$, $PV_0$, $DC_0$) | PVCF($CF_0$, $PV_1$, $DC_{RF}$) - PVCF($CF_0$, $PV_0$, $DC_0$) | PVCF($CF_0$, $PV_1$, $DC_{L1}$) - PVCF($CF_0$, $PV_0$, $DC_{L0}$) |
| Insurance finance expense for effect of changes in discounting assumptions (P&L) | PVCF($CF_0$, $PV_1$, $DC_1$) - PVCF($CF_0$, $PV_1$, $DC_{RF}$) | PVCF($CF_0$, $PV_1$, $DC_1$) - PVCF($CF_0$, $PV_1$, $DC_{RF}$)<br>-<br>Insurance finance expense in OCI | <u>Without OCI option</u>:<br>PVCF($CF_0$, $PV_1$, $DC_1$) - PVCF($CF_0$, $PV_1$, $DC_{L1}$)<br><u>With OCI option</u>:<br>Zero |
| Insurance service expense (P&L) | Payments in the period<br>+<br>Change in RA<br>+<br>PVCF($CF_1$, $PV_1$, $DC_1$) - PVCF($CF_0$, $PV_1$, $DC_1$) | Payments in the period<br>+<br>Change in RA<br>+<br>PVCF($CF_1$, $PV_1$, $DC_1$) - PVCF($CF_0$, $PV_1$, $DC_1$) | Payments in the period<br>+<br>Change in RA<br>+<br>PVCF($CF_1$, $PV_1$, $DC_{L1}$) - PVCF($CF_0$, $PV_1$, $DC_{L1}$) |
| Insurance finance expense for effect of changes in discounting assumptions (OCI) | Zero | AOCI(1) – AOCI(0)<br>=<br>PVCF($CF_1$, $PV_1$, $DC_1$) - PVCF($CF_1$, $PV_1$, $DC_{L1}$)<br>-<br>[PVCF($CF_0$, $PV_0$, $DC_0$) - PVCF($CF_0$, $PV_0$, $DC_{L0}$)] | <u>Without OCI option</u>:<br>Zero<br><u>With OCI option</u>:<br>AOCI(1) – AOCI(0) |
| Total incurred claims and expenses<br>(sum of above elements) | Payments in the period<br>+<br>Change in RA<br>+<br>PVCF($CF_1$, $PV_1$, $DC_1$) - PVCF($CF_0$, $PV_0$, $DC_0$) | Payments in the period<br>+<br>Change in RA<br>+<br>PVCF($CF_1$, $PV_1$, $DC_1$) - PVCF($CF_0$, $PV_0$, $DC_0$) | Payments in the period<br>+<br>Change in RA<br>+<br>PVCF($CF_1$, $PV_1$, $DC_1$) - PVCF($CF_0$, $PV_0$, $DC_0$) |

Approach #3 could be considered if the entity also uses the GMA for its LRC to align financial reporting for the CSM with the financial reporting for the fulfilment cash flows in the LRC and LIC.

In Approach #2, the locked-in curve would be rolled-forward using assumptions consistent with the unwinding method chosen.

Example calculations are presented for Approaches 1 and 2 in Appendix 7 to this draft educational note.

The approaches shown above assume that an unwinding expense and an expense arising from changes in discounting assumptions is not calculated on the risk adjustment portion of the fulfilment cash flows, however this option is illustrated in Appendix 6. The calculation would be made based on the accounting policy choice elected by the entity, in accordance with IFRS 17.81 which states:

> An entity is not required to disaggregate the change in the risk adjustment for non-financial risk between the insurance service result and insurance finance income or expenses. If an entity does not make such a disaggregation, it shall include the entire change in the risk adjustment for financial risk as part of the insurance service result.

Approaches to determining the insurance service and insurance finance expenses other than those described in this draft educational note may be suitable. The actuary is encouraged to discuss alternate financial presentations with their auditors.

## 13. Acceptability of allocations

The acceptability of allocations is specifically noted in IFRS 17.24, which states:

> To measure a group of contracts, an entity may estimate the fulfilment cash flows at a higher level of aggregation than the group or portfolio, provided the entity is able to include the appropriate fulfilment cash flows in the measurement of the group ... by allocating such estimates to groups of contracts.

Paragraph 117 of the Basis for Conclusions IFRS 17 Insurance Contracts states:

> Hence, IFRS 17 allows an entity to estimate the fulfilment cash flows at whatever level of aggregation is most appropriate from a practical perspective. All that is necessary is that the entity is able to allocate such estimates to groups of insurance contracts so that the resulting fulfilment cash flows of the group comply with requirements of IFRS 17.

The actuary may perform the valuation of liabilities on a basis other than the portfolios and groups used for financial reporting. The actuary may need to develop methodologies to allocate estimates of the LIC to portfolios and groups of contracts.

## 14. Illustrative example

### 14.1 Overview

The appendices include two detailed LIC application examples, organized as follows:

- A more complex example allowing the user to determine:
  - The unwinding method among the three presented in Section 10;
  - Whether the OCI option is elected; and
  - Whether the risk adjustment is disaggregated between the insurance service and the insurance finance result.
- A simplified example, assuming that the entity uses the constant yield curve approach to calculate the unwinding expense, does not elect the OCI option and does not elect to

disaggregate the risk adjustment between the insurance service and insurance finance result.

### 14.2 Appendix 1: Selection of payment pattern

This Appendix allows the user to enter assumptions related to the payment pattern of the cash flows.

### 14.3 Appendix 2: Selection of yield curve assumptions

In the illustrative example detailed in the appendices, the selected IFRS 17 discount rate was derived as follows:

- Development of reference portfolio yield curve based on Canadian bonds.
- Adjust reference portfolio yield curve to eliminate credit risk (no market risk or other risk adjustments required).
- Determine the liquidity premium curve by subtracting the risk-free curve (valued at the same date as the reference portfolio) from the adjusted reference portfolio yield rate.
- Interpolate and extrapolate the liquidity premium values as required.
- Add the selected liquidity premium curve to the current risk-free curve.

#### 14.3.1 Reference portfolio yield curve

The bonds are grouped by maturity. While some of the bonds include coupon payments, the existence of such coupon payments is not assumed to create a material inconsistency between the timing of the cash flows in the reference portfolio and those of the insurance contract liabilities. For each maturity group, the approach derives an estimated yield to maturity based on the market price per $100 of face value at the accounting date, the coupon rate (and timing of coupons), and the maturity date for each bond in the group. In the absence of details regarding the par value or value at maturity of the bonds, the par value is assumed equal for each bond in the portfolio.

Table 2 in Appendix 2A shows the estimated yield to maturity by credit rating (Federal, Provincial & Canada Housing Trust, AAA, AA, A, and BBB) and by average time to maturity in 1-year increments from 0.5 years to 9.5 years, and in 5-year increments from 9.5 years to 27.5 years. Refer to Section 14.6 for additional commentary regarding the results presented in Table 2.

To estimate liquidity premiums reflecting different levels of liquidity, two distinct reference portfolios were created. The first reference portfolio is made up of GoC bonds, and provincial bonds (including Canada Housing Trust considered to be equivalent to provincial bonds), all of which are assumed to be highly liquid investments. The second reference portfolio is made up of investment-grade corporate and municipal bonds, which are lower liquidity investments than the first group. The last column in Table 2 shows the estimated yield to maturity attributable to the second reference portfolio, comprised of investment-grade corporate and municipal bonds, each assumed to have the same par value. Alternatively, the yields to maturity by credit rating

may be combined by applying selected weights, with the weights varying by average time to maturity, or as illustrated in Table 2, with the same weights applying across all maturity dates.

### 14.3.2 Credit risk adjustment

In the reference portfolio approach, a credit risk adjustment is applied to each individual bond, depending on the credit rating of the bond. The credit ratings assigned by Bank of America Merrill Lynch are based on an average of Standard & Poor's (S&P), Moody's and Fitch pertaining to bonds denominated in US dollars (there being limited credit risk data available regarding Canadian-denominated bonds). For consistency, the same sources for credit risk adjustments were used. Due to the lack of credible credit risk adjustment data from Fitch, only historical data from S&P and Moody's was used to calculate the credit risk adjustments. Table 3 in Appendix 2A shows the cumulative expected probabilities of default by credit rating, and time to maturity, corresponding to the cells for which a yield to maturity is shown in Table 2.

IFRS 17 requires that the credit risk adjustment encompass unexpected credit risk as well as expected credit risk. The example in Appendix 2 presents two approaches for the derivation of the unexpected credit risk:

- Table 4A – Selected credit risk at a probability level greater than the expected value, and specifically shown at the 90th percentile.
- Table 4B – Selected credit risk derived as a multiple of the expected default risk, specifically shown as twice the expected.

The bonds are grouped by maturity, and a yield to maturity with credit risk adjustment estimated for each group (Appendix 2A, Table 6). In the sample calculation shown below Table 6, a recovery rate of 38.4% is applied to the cash flow associated with a defaulting bond. The recovery rate is based on Moody's US-based default study: *Corporate Default and Recovery Rates 1920-2017* and represents a long-term average across credit ratings and durations.

The credit risk adjustments in basis points (bps) for each group are shown in Appendix 2, Table 7. The adjustments are computed as the yield to maturity with no credit risk adjustment less the yield to maturity after the credit risk adjustment (as described above).

Consideration is also given to the probability that a bond will be downgraded, and particularly if that downgrade causes the rating to fall below a threshold credit rating selected for the reference portfolio. If that were to occur, an adjustment would be considered to reflect a loss upon disposition of the bond. Downgrade risk and its potential effect on credit risk are not included in the example.

### 14.3.3 Market risk and other adjustments

As per IFRS 17.B81, "an entity shall adjust [the reference portfolio] yield curve to eliminate any factors that are not relevant to the insurance contracts". A market risk adjustment is not required if the reference portfolio is comprised solely of bonds, which is the basis selected for the purpose of this draft educational note.

### 14.3.4 Determining the liquidity premium

Risk-free rates as at the valuation date are compared to the credit-adjusted yields from the reference portfolio to determine the liquidity premium. In the illustrative example, the liquidity premium applied to the insurance contract liabilities is assumed to be the same as that derived from the reference portfolio without further adjustment.

## 14.4 Appendix 3: Projection of undiscounted and discounted cash flows – current yield curve

Appendix 3 contains an example of the calculation of discounted cash flows:

- Column (1) presents the undiscounted liability amount, which represents the total estimate of future cash flows.
- Column (2) presents the expected schedule of future cash flows based on the selected payment pattern.
- Line (7) presents the selected yield curve.
- Line (8) presents the expected timing of future cash flows.

Column (3) contains the cash flows discounted using the current yield curve.

If the entity elects the OCI option, the future cash flows are projected by issue year. The actuary may estimate these directly from the data, or allocate cash flows determined on an accident year basis to issue years. For the purpose of the illustrative example, cash flows from accident years were allocated to issue years assuming that one issue year spans two accident years (e.g., the cash flows associated with issue year 2018 as 50% and 50% of the cash flows from accident years 2018 and 2019 respectively).

## 14.5 Appendix 4: Projection of undiscounted and discounted cash flows – locked-in yield curve

Appendix 4 is similar to Appendix 3 and presents the cash flows by issue year discounted at locked-in rates. The example assumes that the entity uses the PAA and the locked-in rate is assumed to be the rate applicable at the average incurred date of the claims in the group (e.g. for issue year 2018, the locked-in date is assumed to be December 31, 2018 if the group consists of one-year policies written uniformly throughout the year).

For the most recent issue year (i.e. issue year 2022 in the example), the exposure is not fully earned and therefore the average claim date, and correspondingly the locked-in yield curve, would be subject to change until the coverage is fully earned.

### 14.5.1 Appendix 5: Summary of LIC

This appendix presents a summary of the estimates of future cash flows, the discounted cash flows, the risk adjustment, and the fulfilment cash flows. For the purpose of this example, the risk adjustment is assumed to be a percentage of the discounted cash flows.

### 14.5.2 Appendix 6: Calculation of insurance finance expense and Appendix 7: Financial statement entries

An illustration of full financial statement entries is provided in Appendices 6 and 7. Calculation details are provided in Sections 10 to 12.

## 14.6 Sources of data for illustrative examples

### 14.6.1 Reference portfolio

The reference portfolio model illustrated in Appendix 2 uses the Bank of America Merrill Lynch (BAML) Canada Bond Market Index at December 2018. From the BAML data, the following bond subsets were created, each grouped by time to maturity.

- A Canada Bond subset, including bonds issued by Canadian federal agencies.
- A Provincial & CHT Bond subset, in which all issuers but one are direct provincial issuers, and most have a credit rating of AA by at least one major rating agency. Canada Housing Trust (CHT) is a quasi-government issue and was included in this subset after consideration of its characteristics and market values.
- Four corporate/municipal bond subsets, based on credit ratings of AAA, AA, A, and BBB. The issuers in these subsets include quasi-governmental entities.

The table below, shows the number of bonds in the BAML Canadian Bond Market Index at December 2018, by subset and by time to maturity.

**December 2018 BAML Reference Portfolio**
**Number of Bonds by Subset and Time to Maturity**

| Time to maturity (Years) | Canada bonds | Prov. & CHT | Group A | Corporate/Municipal bonds by credit rating | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | AAA | AA | A | BBB | Group B |
| 0.5 | 0 | 4 | 4 | 1 | 6 | 4 | 3 | 14 |
| 1.5 | 7 | 19 | 26 | 18 | 22 | 31 | 51 | 122 |
| 2.5 | 4 | 17 | 21 | 8 | 26 | 43 | 43 | 120 |
| 3.5 | 3 | 18 | 21 | 4 | 18 | 27 | 43 | 92 |
| 4.5 | 4 | 19 | 23 | 8 | 12 | 22 | 35 | 77 |
| 5.5 | 2 | 13 | 15 | 3 | 6 | 18 | 32 | 59 |
| 6.5 | 2 | 20 | 22 | 6 | 9 | 14 | 28 | 57 |
| 7.5 | 1 | 14 | 15 | 3 | 7 | 12 | 21 | 43 |
| 8.5 | 2 | 13 | 15 | 3 | 8 | 7 | 25 | 43 |
| 9.5 | 1 | 14 | 15 | 2 | 3 | 11 | 13 | 29 |
| 12.5 | 3 | 28 | 31 | 5 | 9 | 28 | 24 | 66 |
| 17.5 | 1 | 25 | 26 | 3 | 17 | 27 | 28 | 75 |
| 22.5 | 1 | 33 | 34 | 4 | 21 | 49 | 43 | 117 |
| 27.5 | 2 | 26 | 28 | 3 | 16 | 62 | 37 | 118 |
| Other | 2 | 26 | 28 | 4 | 18 | 23 | 12 | 57 |
| Total # | **35** | **289** | **324** | **75** | **198** | **378** | **438** | **1089** |
| Weight by # | 11% | 89% | 100% | 7% | 18% | 35% | 40% | 100% |
| **Weight by MV** | 37% | 63% | 100% | 9% | 28% | 28% | 35% | 100% |

Bonds maturing up to 31 December 2028 were grouped in 1-year maturity increments, each assumed to have a time to maturity at the mid-point of the group (i.e., 0.5 years up to 9.5 years). Bonds maturing on or after 1 December 2029 were grouped in 5-year maturity increments, each assumed to have a time to maturity at the midpoint of the group (i.e., 12.5 years up to 27.5 years). Bonds maturity beyond 30 years were excluded. The reference portfolio constructed on this basis is referred to in the remainder of this paper as the "December 2018 BAML Reference Portfolio."

The BAML Index does not include market or par values, but market values were obtained for about 85% of the bonds referenced below from iShares (Core – Canadian Universe Bond Fund). These market values were not used directly in this analysis but were used as the basis for selecting the weights to combine various categories of bonds.

For illustrative purposes only, the December 2018 BAML-based Reference Portfolio was converted into a December 2022 reference portfolio by adding five years to the valuation date and the maturity date of each bond. The market prices at December 31, 2022 were assumed to be equal to the actual market prices at December 31, 2017.

### 14.6.2 Risk-free rates

Government of Canada zero-coupon bond yield curves as of December 31, 2018 (used to derive the liquidity premium in Section 4.4).

bankofcanada.ca/rates/interest-rates/bond-yield-curves/

### 14.6.3 Credit default and downgrade risk

There is insufficient Canada data to use as the basis for estimating either of the credit default risk and downgrade risk. Instead, the Committee relied on global studies published by Moody's and S&P. Defaults analyzed by Moody's include bonds from North America (about 75%), Europe (about 15%), and Latin America/Asia Pacific/Africa/Middle East (about 10%). S&P have a comparable distribution of bonds.

1. Moody's Investors Service

   Annual Default Study: Corporate Default and Recovery Rates, 1920–2017 (published yearly in February):

   i) Exhibit 33 – Average Cumulative Issuer-Weighted Global Default Rates by Letter Rating

   ii) Exhibit 41 – Cumulative Issuer-Weighted Default Rates by Annual Cohort

   iii) Exhibit 21 – Average Sr. Unsecured Bond Recovery Rates by Year Prior To Default

   iv) Exhibit 29 – Average One-Year Alphanumeric Rating Migration Rates.

2. S&P Global Ratings

   2017 Annual Global Corporate Default Study and Rating Transitions (published yearly in April)

   i) Table 24 – Global Corporate Average Cumulative Default Rates

   ii) Table 23 – Average One-Year Transition Rates for Global Corporates by Rating Modifier

**1) US bond spread**

Federal Reserve Bank of St. Louis (https://fred.stlouisfed.org)

The data is updated daily. The average as of December 31, 2017 was used, based on the following tables:

i) ICE BofAML US Corporate AAA Option-Adjusted Spread, Percent, Daily, Not Seasonally Adjusted (BAMLC0A1CAAA)

**2) US bond index average maturity**

S&P 500 Bond Indexes (https://us.spindices.com/)

The data is updated monthly. We used data as of July 31, 2018, based on the following tables:

i) S&P 500® AAA Rated Corporate Bond Index
ii) S&P 500® AA Rated Corporate Bond Index
iii) S&P 500® A Rated Corporate Bond Index

Canadian Institute of Actuaries | Institut canadien des actuaires

*Educational Note*

# 2021 Guidance to the Appointed Actuary and Valuation Actuaries of Property and Casualty Insurers

**Committee on Property and Casualty Insurance Financial Reporting**

**August 2021**

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*The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.*

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# MEMORANDUM

**To:** Members in the property and casualty insurance practice area

**From:** Steven W. Easson, Chair
Actuarial Guidance Council

Sarah Chevalier, Chair
Committee on Property and Casualty Insurance Financial Reporting

**Date:** September 1, 2021

**Subject:** **Educational Note – 2021 Guidance to the Appointed Actuary and Valuation Actuaries for Property and Casualty Insurers**

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The Committee on Property and Casualty Insurance Financial Reporting (PCFRC or the Committee) has prepared this educational note to provide guidance to the Appointed Actuary and valuation actuaries (referred to as "actuaries" in the rest of this note) in several areas affecting the valuation of the 2021 year-end insurance contract liabilities and other responsibilities of the Appointed Actuary of property and casualty insurers.

The educational note is structured in nine sections and two appendices. The nine sections provide guidance on recent and emerging guidance and issues. Appendix A contains a list of relevant educational notes and reference documents. Appendix B provides an update on IFRS 17.

A preliminary version of this educational note was shared with the following committees for their review and comments:

- Committee on Life Insurance Financial Reporting (CLIFR)
- Committee on Risk Management and Capital Requirements (CRMCR)
- Committee on the Appointed/Valuation Actuary (AAC)
- International Insurance Accounting Committee (IIAC)
- Committee on Worker's Compensation

The educational note was also presented to the Actuarial Guidance Council (AGC) in the months preceding its approval. The PCFRC is satisfied it has sufficiently addressed the material comments received by the various committees and the AGC.

The creation of this cover letter and educational note has followed the AGC's protocol for the adoption of educational notes. In accordance with the Institute's *Policy on Due Process for the Approval of Guidance Material other than Standards of Practice and Research Documents*, this educational note has been prepared by PCFRC and has received approval for distribution from the AGC on August 25, 2021.

The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.

Some guidance provided last year is still appropriate and has been duplicated in this educational note. The guidance is labelled as unchanged. Other guidance has been modified, either to reflect recent developments or to improve clarity and is labelled as modified.

Questions or comments regarding this educational note may be directed to Sarah Chevalier at sarahchevalier@axxima.ca.

SWE, SC

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## 1. Introduction *(modified)*

The Committee on Property and Casualty Insurance Financial Reporting (PCFRC) of the Canadian Institute of Actuaries (CIA) prepared this educational note to provide guidance to property and casualty (P&C) actuaries in the valuation of insurance contract liabilities and other responsibilities of the Appointed Actuary and valuation actuaries (referred to as "actuaries" in the rest of this note). This educational note reviews relevant standards of practice (SOP) and other educational notes and discusses current issues affecting the work of actuaries. Links to all the CIA documents referenced in this educational note are provided in Appendix A.

## 2. Guidance to members on specific situations *(modified)*

From time to time, CIA members seek advice or guidance from the PCFRC. The PCFRC strongly encourages such dialogue. CIA members are assured that it is proper and appropriate for them to consult with the chair or vice-chair of the PCFRC.

CIA members are reminded that responses provided by the PCFRC are intended to assist them in interpreting the SOP, educational notes, and Rules of Professional Conduct (Rules), and in assessing the appropriateness of certain techniques and/or assumptions. A response from the PCFRC does not constitute a formal opinion as to whether the work in question is in compliance with the SOP and Rules. Guidance provided by the PCFRC is not binding upon the CIA members.

## 3. Standards of Practice *(modified)*

The SOP are subject to revision from time to time. At the time of writing this educational note, references to the Rules and to the SOP correspond to the latest versions, effective December 1, 2020. There were no changes to Parts 1000 or 2000 during 2021.

While all the Rules and SOP are important, your attention is directed to the following SOP sections that are particularly relevant:

- Subsection 1240 – Materiality
- Section 1400 – The Work
- Section 1500 – Another Person's Work
- Section 1600 – Assumptions and Methods
- Section 1700 – Reporting
- Section 2100 – Insurance Contract Valuation: All Insurance
- Section 2200 – Insurance Contract Valuation: Property and Casualty Insurance
- Section 2400 – The Appointed Actuary
- Section 2500 – Financial Condition Testing

## 4. Recent guidance *(modified)*

This section contains a list of guidance material published recently to assist actuaries in their year-end valuation of insurance contract liabilities and Financial Condition Testing (FCT) work.

No recent guidance material was published in relation to year-end valuations.

The following educational notes were published in the last 12 months and provide relevant guidance with respect to the FCT:

- Educational Note: *Guidance for the 2021 Reporting of Capital and Financial Condition Testing for Life, P&C, and Mortgage Insurers* (April 2021). This document is prepared annually by the Committee on Risk Management and Capital Requirements (CRMCR).

## 5. COVID-19 *(modified)*

The COVID-19 outbreak was first identified in Wuhan, China, in December 2019. During the first quarter of 2020, various outbreaks were identified around the world. The World Health Organization declared it a pandemic on March 11, 2020. Since then, a few waves of the pandemic have been observed in the different provinces of Canada and across the world, generating slowdowns in economic activities of different extents and magnitude.

As the COVID-19 situation continues to evolve, actuaries would pay close attention to all guidance and expectations from the Office of the Superintendent of Financial Institutions (OSFI), the Autorité des marchés financiers (AMF), and the CIA. In particular, OSFI is requiring insurance companies to report on a regular basis the statistics and impacts related to COVID-19. The actuaries may consider the data from these reports in their work related to the valuation of insurance contract liabilities and financial condition testing.

Actuaries would also pay close attention to all legislative changes that may impact estimates related to COVID-19. In particular, the Ontario government passed Bill 218 Supporting Ontario's Recovery Act, 2020, for which Schedule 1 may affect medical and other professional liabilities.

Actuaries would apply care and judgment on how COVID-19 has affected trends and key metrics. They would also consider the reporting expectations from the AMF and OSFI on the specific elements to be included in the actuarial reports. Wherever relevant, actuaries would comment in their reports about the impact that the COVID-19 pandemic has had on the insurer and the adjustments that were made in their policy liabilities valuation to take it into account. While the impact of COVID-19 might not always be easy to differentiate from other elements like favourable weather conditions, some elements like premium reductions and refunds, and the impact on the cost of material and labour may be easier to isolate.

To address issues stemming from COVID-19, OSFI and the AMF announced the following action with respect to MCT in their respective news releases on April 9, 2020:

- Approved premium payment deferrals will not increase capital requirements on outstanding premiums related to those deferrals.

OSFI and the AMF gradually phased out this measure in their news releases, respectively of August 31, 2020, and September 3, 2020. As of March 1, 2021, these measures were no longer applicable.

In 2020, the CIA had engaged in informing members about COVID-19, through a hub on its website. In 2021, the hub is no longer active and its contents have been moved to the Seeing Beyond Risk website. Of particular interest to P&C actuaries was an article written by PCFRC members in July 2020 to discuss special considerations due to COVID-19 (login required). While

the content of the article is still relevant and worth considering by P&C actuaries, a new article (login required) containing updated or additional considerations in light of the year that has passed was published in September 2021. Both of these articles reflect the opinion of the authors and do not represent official guidance of the CIA.

## 6. Financial Condition Testing *(modified)*

The CRMCR published an educational note titled *Financial Condition Testing* in April 2020, with a transitional effective date of January 1, 2020. This educational note provides guidance on how to interpret the revised SOP and summarizes the major changes from the prior SOP on DCAT. It also addresses the goals of stress testing by providing details from OSFI and AMF guidelines. Appendix B of the FCT educational note contains a discussion of various P&C risk categories to be considered by the actuaries while conducting the FCT.

In April 2021, the CRMCR published an educational note titled *Guidance for the 2021 Reporting of Capital and Financial Condition Testing for Life, P&C, and Mortgage Insurers*. This educational note provides an overview of guidance to actuaries in several areas affecting the reporting of the 2021 regulatory capital requirements and financial condition testing for insurers operating in Canada. Section 5 of this educational note ("Considerations for the 2020 Financial Condition Testing (FCT)") contains key changes in the SOP: Section 2500, support for dealing with the upcoming changes due to IFRS 17 with respect to FCT forecasts, and special considerations due to COVID-19 for the 2021 FCT.

## 7. International Financial Reporting Standards 17 (IFRS 17) *(unchanged)*

There is no impact from IFRS 17 – Insurance Contracts on the 2021 year-end actuarial valuation; however, actuaries are encouraged to refer to the IFRS 17 blog on the CIA website (login required) for up-to-date summaries of CIA activities and links to relevant sources of information regarding IFRS 17. The International Accounting Standards Board (the Board) decided to delay the effective date of IFRS 17 by another year, to January 1, 2023, and issued the final amendments to IFRS 17 in June 2020.

Appendix B contains information about the development of SOP, guidance, and capital requirements for financial reporting periods under IFRS 17.

## 8. Regulatory guidance *(modified)*

Actuaries would refer to updated communications from provincial and/or federal insurance regulators regarding insurance contract liabilities valuation and FCT reporting.

### 8.1. Office of the Superintendent of Financial Institutions (OSFI) Requirements *(modified)*

***OSFI Annual Memorandum for Actuarial Reports on P&C Business***

OSFI issues an annual Memorandum to the Appointed Actuary. Actuaries would consult this memorandum for complete instructions from OSFI. Of particular importance this year is the following comment: "The Appointed Actuary should disclose whether or not the company has exposure to mass tort and latent claims (including potential exposure emanating from residential schools), and if the company has had a subsequent event. If the company has such

exposure, the Appointed Actuary should discuss the nature and treatment of those claims in the calculation of the provisions for unpaid liabilities."

***Capital requirements***

The MCT Guideline[1] currently in effect was issued by OSFI in November 2018 with an effective date of January 1, 2019. This 2019 MCT Guideline increased the margin required for reinsurance ceded to unregistered reinsurers and introduced a transition period for this increase. Guideline A-4 *Regulatory Capital and Internal Capital Targets* sets out OSFI's expectations with respect to the setting of insurer-specific internal target capital ratios and how such targets relate to the assessment of capital adequacy within the context of OSFI's supervisory framework. Guideline E-19 *Own Risk and Solvency Assessment* sets out OSFI's expectations with respect to an insurer's own assessment of its risks, capital needs, and solvency position and for setting internal targets. Capital guidelines for mortgage insurers can be found at Mortgage Insurer Capital Adequacy Test.

***Guideline E-15 Appointed Actuary: Legal Requirements, Qualifications, and Peer Review***

A full peer review of both the Appointed Actuary's Report (AAR) and the FCT report is required at least once every three years. However, OSFI expects material changes, if any, affecting the valuation of policy liabilities or ceded reinsurance assets to be reviewed and reported on annually. Otherwise, OSFI expects the reviewer to undertake a limited scope annual review in the interim years and to prepare and file a report annually.

***Guideline B-9 Earthquake Exposure Sound Practices***

OSFI requires insurers to file the Earthquake Exposure Data Form and instructions by May 31 of each year using the Regulatory Reporting System.

***COVID-19 Measures – FAQs for Federally Regulated Insurers***

OSFI has created a list of standardized responses to frequently asked questions for federally regulated insurers about measures it has taken to address issues stemming from COVID-19.

***Future Policy Priorities***

In May 2021, OSFI published their near-term plan of prudential policy for federally regulated financial institutions and federally regulated private pension plans. Among other things, this policy outlines OSFI's plans on publishing industry letters related to climate change and technology risk, as well as plans for IFRS-17-related guidance.

### 8.2. Requirements of the Autorité des marchés financiers (AMF) *(modified)*

***AMF Annual Guides for Actuarial Reports on P&C Business***

The AMF issues specific guides to actuaries of Québec-chartered insurers for both the valuation of insurance contract liabilities and the FCT. The actuaries would consult these guides for the complete requirements from the AMF.

[1] References in this section of this educational note to OSFI's minimum capital test (MCT) for Canadian insurers are also intended to encompass comparable requirements for Canadian branches of foreign insurers, i.e., the Branch Adequacy of Assets Test (BAAT).

The AMF guide regarding the mandatory insurance contract liabilities report is updated annually and it addresses regulatory requirements and the report's expected content and prescribed layout. The AMF guide also mandates prescribed exhibits for reporting results of the actuaries' valuation. Prescribed exhibits include the unpaid claims and loss ratio analysis exhibits for which specific instructions are also available along with the guide.

The FCT guide is updated annually and addresses the same general aspects as the guide on the valuation of insurance contract liabilities. When completing the FCT report, actuaries are advised to be aware of the latest developments in the calculation of the MCT ratio.

***Capital Requirements***

In December 2019, the AMF published its revised MCT guideline, which came into effect on January 1, 2020. The changes were limited to adaptations made necessary by the coming into force of the Insurers Act and minor edits or clarifications.

After the Insurers Act came into effect in June 2019, the AMF published two new MCT guidelines regarding the solvency requirements respectively of self-regulatory organizations and reciprocal unions authorized to carry on insurer activities. These guidelines were revised as of January 1, 2020, and are for the most part very similar to the current 2020 MCT guideline for traditional insurers, but with necessary adaptations.

Actuaries would be expected to be familiar with any subsequent revision to the capital requirements and incorporate them where applicable.

***Earthquake Exposure Data Requirements***

Actuaries would also be aware that starting in 2022, the AMF requires all authorized insurers to follow the AMF's instructions and to file the AMF's own Earthquake Exposure Data Form by May 31 of each year.

***Integrated Risk Management Guideline and Capital Management Guideline***

There has been no change to the Integrated Risk Management Guideline published by AMF in 2015, to accompany the publication of its Capital Management Guideline. These guidelines are meant to give specific expectations regarding capital and risk management.

The AMF expects actuaries to be involved in the own risk and solvency assessment (ORSA), especially with regards to setting the internal capital target and stress testing as a complementary tool to FCT.

The AMF also expects the application of the ORSA to be the subject of an official report to the board of directors at least once a year, or more often if the financial institution's risk profile changes significantly, and assesses the degree of compliance to these guidelines as part of its supervisory framework.

## 9. Emerging issues and other considerations *(modified)*

It is important for actuaries to be aware of current or emerging issues that could affect valuation of insurance contract liabilities. Some of these considerations might also affect the FCT. Several considerations are discussed below.

### 9.1. Product reforms *(modified)*

Actuaries would consider the potential effect that product reforms may have on both the valuation of insurance contract liabilities and on the FCT. For example, actuaries would consider the potential impact, if any, of the proposed transition to a no-fault automobile insurance framework in British Columbia, changes to strata insurance in British Columbia, changes to the Occupier's Liability Act in Ontario, and changes to the Alberta automobile insurance product including: the definition of "minor injury," the changes to Pre-Judgment Interest, and the introduction of Direct Compensation Property Damage (DCPD).

### 9.2. Recent judicial, legislative, and political events *(modified)*

Regular communication with claims professionals is essential to the work of the actuaries. These discussions would encompass the potential effect of recent court decisions, judicial events, legislative changes, and political events that may be relevant to the valuation of insurance contract liabilities and FCT.

Actuaries would also consider any changes to the provincial or federal tax system or rates that need to be incorporated into the valuation of insurance contract liabilities or FCT work.

### 9.3. Catastrophic events *(unchanged)*

From time to time, catastrophic events occur that have the potential to affect actuaries' estimate of claim liabilities and, in some cases, the premium liabilities. Events that are considered catastrophic on an industry-wide basis may not have a catastrophic effect for a given insurer, while regional industry events may (e.g., the 2021 wildfires in British Columbia). The extent to which any event is significant in the context of the valuation of insurance contract liabilities for a specific insurer depends on the nature of the insurer's business, its exposure in the affected region, policy wordings, and the date on which the event occurred.

The actuaries would consider the effect of extreme events on the following:

- Additional costs on other losses due to post-event inflation in the region as well as the rest of the country.
- The payment pattern and any change that the event may have on paid claims.
- Unallocated loss adjustment expenses (ULAE) estimates that may need to be tempered to the extent that the factor used to calculate the provision is a ratio to unpaid losses.
- Margins for adverse deviations, particularly for recovery from reinsurance ceded.

### 9.4. Climate change *(modified)*

Weather-related disasters are occurring with greater frequency and magnitude than the industry has experienced in the past. In the transition period to the evolving climate reality, further estimation of the impact on claims is anticipated among new claim risks that will evolve within the actuaries' mandate as it relates to setting claims reserves and capital requirements. In January 2021, OSFI published the discussion paper *Navigating Uncertainty in Climate Change* in order to engage insurance companies and other stakeholders in a dialogue on the risks resulting from climate change that can affect them. It is expected that this dialogue might lead to future OSFI guidelines specific to climate change. In April 2021, the CIA's Committee on

Climate Change and Sustainability (CCSC) published a Practice Resource Document to support Canadian actuarial practitioners in building climate scenarios and developing best practices in assessing the financial risks associated with climate change. Whereas, there are no mandatory disclosure requirements for 2021, actuaries would consider keeping abreast of these developments. Additional resources from the CCSC can be found at https://www.cia-ica.ca/ccsc-resources.

## Appendix A – References

The following is a list of selected documents referenced in this educational note:

**CIA SOP and Rules**

- *Standards of Practice*
- *Rules of Professional Conduct*

**CIA task force reports**

- *Materiality* (October 2007)
- *Report of the CIA Task Force on the Appropriate Treatment of Reinsurance* (October 2007)

**CIA educational notes**

- *Guidance for the 2021 Reporting of Capital and Financial Condition Testing for Life, P&C, and Mortgage Insurers* (April 2021)
- *Financial Condition Testing* (April 2020)
- Educational Note Supplement: *Updated Guidance for the 2019 Reporting on Capital and Financial Condition Testing for Life and P&C Insurers* (December 2019)
- *Duration Considerations for P&C Insurers* (March 2017)
- *Use of Models* (January 2017)
- *Premium Liabilities* (July 2016)
- *Discounting and Cash Flow Considerations for P&C Insurers* (May 2016)
- *Subsequent Events* (October 2015)
- *Evaluation of the Runoff of P&C Claim Liabilities when the Liabilities are Discounted in Accordance with Accepted Actuarial Practice* (June 2011)
- *Accounting for Reinsurance Contracts under International Financial Reporting Standards* (December 2009)
- *Margins for Adverse Deviations for Property and Casualty Insurance* (December 2009)
- *Classification of Contracts under International Financial Reporting Standards* (June 2009)
- *Consideration of Future Income Taxes in the Valuation of Policy Liabilities* (July 2005)
- *Valuation of Policy Liabilities P&C Insurance Considerations Regarding Claim Liabilities and Premium Liabilities* (June 2003)

**CIA research paper**

- *Disclosure Requirements IFRS 4 – Insurance Contracts for P&C Insurers* (October 2010)

**CIA blog**

- CIA IFRS 17 Blog (Log-in required)
- CIA Seeing Beyond Risk) (including the content previously available on the CIA COVID-19 Hub

**OSFI documentation**

- *Memorandum to the AA* (August 2021)
- *MCT Guideline* (January 2019)
- Guideline A-4 *Regulatory Capital and Internal Capital Targets* (January 2018)
- Guideline E-19 *Own Risk and Solvency Assessment* (December 2017)
- *Earthquake Exposure Data Form and instructions* (March 2020)
- Navigating Uncertainty in Climate Change (January 2021)
- COVID-19 Measures – FAQs for Federally Regulated Insurers (December 2020)
- OSFI's *Near-Term Plan of Prudential Policy for Federally Regulated Financial Institutions and Federally Regulated Private Pension Plans*

**AMF documentation**

- *Valuation of insurance contract liabilities* (September 2021)
- *Unpaid claims and loss ratio analysis exhibits* and *Instructions* (September 2021)
- *Guideline on Capital Adequacy Requirements: Property and casualty insurance* (January 2020)
- *Capital Adequacy Requirements Guideline: Self-regulatory organizations* (January 2020)
- *Capital Adequacy Requirements Guideline: Reciprocal Unions* (January 2020)
- *Actuary's guide regarding the Financial Condition Testing report of P&C Insurers* (January 2021)
- Earthquake Exposure *Data Form* and *Instructions* (June 2021)
- *Integrated Risk Management Guideline* (May 2015)
- *Capital Management Guideline* (May 2015)

# Appendix B – IFRS 17

The following information discusses the development of SOP, guidance, and capital requirements for financial reporting periods under IFRS 17.

**Standards of Practice**

In June 2020, the International Accounting Standards Board (IASB) published the final standard for Insurance Contracts, IFRS 17. The implementation date will be fiscal years beginning on or after January 1, 2023. For the most current information please see the IASB website. Note that an eIFRS professional account is required to access the final standards and related documents.

The Canadian Accounting Standards Board has indicated its intention that IFRS 17 will be adopted without modification for the valuation of insurance contracts in Canadian generally accepted accounting principles (GAAP) financial statements.

The International Actuarial Association (IAA) released International Standard of Actuarial Practice 4 (ISAP 4) on IFRS 17 Insurance Contracts in November 2019. ISAP 4 covers actuarial practice in support of valuation of insurance contract liabilities in accordance with IFRS 17. The changes proposed in the CIA exposure draft align the SOP with the requirements of IFRS 17 and incorporate the guidance of ISAP 4. These developments require changes to the Canadian SOP, as the valuation methods under IFRS 17 are significantly different from the current methods of valuation of insurance contract liabilities in Canada.

The Actuarial Standards Board (ASB) published the following document in February 2021: *Second Revised Exposure Draft to Incorporate changes required by the adoption in Canada of IFRS 17 Insurance Contracts, including Principles of International Standard of Actuarial Practice 4 – Actuarial Practice in Relation to IFRS 17 Insurance Contracts, into the Canadian Standards of Practice* (clean).

The CIA is very active in this area, with several committees involved in reviewing the IFRS 17 standards and related guidance.

The CIA Committee on International Insurance Accounting (IIAC) under the International Affairs Council has the following mandate with regards to international accounting and actuarial standards for the valuation of insurance and related products:

- Monitor developments and ensure that news of relevant and material developments is dispersed appropriately within the CIA.
- Recommend where specific additional Canadian guidance may be helpful, and if so, assist in its development.
- Where relevant and appropriate, provide input from a CIA perspective to the international governing bodies.

**Guidance**

The IAA is developing an International Actuarial Note (IAN 100). The CIA Actuarial Guidance Council (AGC) has reviewed the current exposure draft of IAN 100 and released it as a draft educational note *Application of IFRS 17 Insurance Contracts* in February 2019. This draft educational note is intended to assist CIA members in the application of IFRS 17.

Additional guidance to members has been developed by the CIA, in the form of draft educational notes and reports. At this time, the following guidance material have been published:

- Revised draft educational note: *IFRS 17 Discount Rates and Cash Flow Considerations for Property and Casualty Insurance Contracts* (December 2020)
- Revised draft educational note: *Update to draft educational notes: Changes to the reference curves outlined in CLIFR's and PCFRC's draft educational notes on IFRS 17 discount rates* (June 2021)
- Revised draft educational note: *Assessing Eligibility for Premium Allocation Approach Under IFRS 17 for Property & Casualty and Life & Health Insurance* (December 2020)
- Revised draft educational note: *Comparison of IFRS 17 to Current CIA Standards of Practice* (November 2020)
- Draft educational note: *IFRS 17 – Actuarial Considerations Related to P&C Reinsurance Contracts Issued and Held* (April 2020)
- Draft educational note: *IFRS 17 – Compliance with IFRS 17 Applicable Guidance* (January 2020)
- Draft educational note: *Liability for Remaining Coverage* (June 2021)
- Draft explanatory report: *IFRS 17 Expenses* (April 2021, Joint working group with CLIFR)

The following guidance material is currently being developed (expected to be published in 2021):

- Draft educational note: Fair Value (joint working group with CLIFR)
- Revised draft educational note: IFRS 17 Risk Adjustment for Non-Financial Risk for Property and Casualty Insurance Contracts
- Report on disclosures (joint working group with CLIFR)
- Report on Recoverability of Acquisition Expenses

The guiding principles for the development of educational notes and reports are:

- To consider Canadian-specific perspectives and address gaps in the IAN 100.
- Provide application guidance that is consistent with the IFRS 17 Standard and applicable Canadian actuarial SOP and educational notes, without unnecessarily narrowing the choices available in the IFRS 17 Standard.
- Consider practical implications associated with implementation of potential methods; in particular, ensure that due consideration is given to options that do not require undue cost and effort to implement.

The CIA is also engaged in educating members about IFRS 17, through webcasts, sessions at CIA meetings, and other forums. The CIA website has an IFRS 17 blog (login required). This members-only resource centre serves as a repository for everything about IFRS 17, including documents, links to important websites, and updates from the committees working to help members for this significant change. Moreover, the mandates of each of the subcommittees mentioned above can be found on the blog.

**IFRS 9 Financial Instruments**

Most insurers will not adopt IFRS 9 until IFRS 17 becomes effective in 2023; however, some entities have already adopted IFRS 9, most notably those that are part of larger financial institutions, such as bank-owned insurers. For those entities, the actuary could have seen changes in the carrying value of assets that potentially affected the valuation. There could also have been new credit loss provisions established by the accountants under IFRS 9; if so, the actuary would have taken steps to avoid any double-counting with the credit provisions included in the actuarial liability.

**Regulatory Capital Requirements and Returns (IFRS 17)**

OSFI and the AMF have issued draft regulatory capital requirements guidelines. A first quantitative impact study (QIS) related to the draft MCT guideline was conducted in October 2019. A second version of the draft MCT guideline and a second QIS was conducted in the fall of 2020. A third QIS is currently being conducted for the summer/fall of 2021. Data and comments collected from that exercise will be used to finalize decisions on policy issues, calibrate the MCT guideline capital requirements, and determine whether any transition measures are required. Final P&C returns that have been adapted to reflect changes related to IFRS 17 have also been circulated to industry.

**Considerations for FCT**

Based on the CRMCR *Guidance for the 2021 Reporting of Capital and Financial Condition Testing for Life and P&C Insurers* issued in April 2021:

> "In principle, FCT forecasts beyond January 1, 2023, should be produced under IFRS 17 and the updated regulatory capital requirement guidelines. However, the regulatory capital requirement guidelines are not final, and insurers may not yet be able to produce reliable financial projections under IFRS 17. In these circumstances, an appropriate practice would be to continue to perform FCT in 2021 using the current accounting standards, actuarial standards, and current regulatory capital guidelines, with additional qualitative analysis on IFRS 17. Considerations for this qualitative analysis could include directional impacts associated with key items, such as but not limited to discount rates, risk adjustment and contractual service margin, under the IFRS 17 framework. Quantitative analysis could also be added if available. If Quantitative Impact Studies reveal potential issues from newly released versions of the regulatory capital requirement guidelines in between filings of the FCT report, it could also be appropriate for the Appointed Actuary to describe these potential issues to the board or chief agent along with any potential mitigating actions, either in the FCT report or presentation, or through regular IFRS 17 updates. The actuary is

expected to enhance IFRS 17 analysis for FCT in 2022 in line with the development of industry practices and regulatory guidelines."

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*Educational Note*

# Application of IFRS 17 Insurance Contracts

## Actuarial Guidance Council

**October 2021**

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# MEMORANDUM

**To:** Members in the life insurance, property and casualty insurance, and workers' compensation areas

**From:** Steven W. Easson, Chair
Actuarial Guidance Council

Les Rehbeli, Chair,
International Insurance Accounting Committee

**Date:** October 21, 2021

**Subject:** **Educational Note: Application of IFRS 17 Insurance Contracts**

International Financial Reporting Standard 17 (IFRS 17) will be effective in Canada for fiscal years beginning on or after January 1, 2023.

In preparation for this new standard, the CIA has reviewed the final version of the International Actuarial Note 100 (IAN 100) by the International Actuarial Association (IAA), and has decided to adopt it as a CIA educational note.

This educational note addresses each of the main topics of IFRS 17 and offers practical examples of ways in which actuaries might implement the Standard. It is supplemented by Canadian-specific guidance that has been, or is in process of, being developed by various CIA practice committees. Additional information about the IFRS 17 related activities of these committees can be found on the CIA IFRS 17 blog (login required).

Since the IAN 100 was originally published by the IAA, it is presented in a different format and may use different terminology than that used in the *Standards of Practice* and educational notes developed by the Actuarial Standards Board/CIA.

The CIA has identified a number of clarifications that are needed to several of the topics discussed in the final IAN 100[1]. The CIA decided not to modify any of the chapters in the IAN 100 directly in order to avoid confusion with the official version of IAN 100 and to avoid the burdensome requirement to coordinate future updates with any IAA revisions to IAN 100. Rather, the CIA has noted these clarifications in the preamble below and encourages members to review these clarifications in conjunction with the core IAN 100 document that follows. Any direct quotes from the IAN 100 are in quotation marks in the preamble below.

For ease of reference, the sections referred to in the list below are highlighted in green within IAN 100, so that a reader can easily identify and cross-reference those sections in the IAN 100 where a clarification is needed with the list below. It should be noted that only significant

[1] These clarifications have been communicated to the IAA during their drafting phases for their consideration in future updates to IAN 100.

clarifications are included, i.e., where the absence of a clarification would result in an inappropriate interpretation of the particular question and answer. The CIA did not focus on minor clarifications, such as typographical errors and labelling issues (unless the error would otherwise inappropriately change the interpretation of the guidance).

The creation of this cover letter and educational note has followed the Actuarial Guidance Council (AGC) protocol for the adoption of educational notes. In accordance with the CIA's *Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice and Research Documents*, this educational note received final approval for distribution by the AGC on October 12, 2021.

Due to the length of the document and the time-sensitive nature of the information, and in accordance with the exemptions section of the *Policy on Bilingualism*, the President of the CIA granted an exemption from publishing the French version of the IAN 100 simultaneously with the English version. The translation is underway, and a French version will be released as soon as practicable.

This educational note is written from the perspective of Canadian actuaries and is not intended to duplicate any other guidance. Additional information can be found in IAA guidance or other CIA documents. The draft educational note *Compliance with IFRS 17 Applicable Guidance* provides guidance to actuaries when assessing compliance with IFRS 17. It is applicable to all educational notes pertaining to IFRS 17 and members are encouraged to review it prior to reading any educational note related to IFRS 17.

If you have any questions or comments regarding this process, please contact Steven W. Easson, chair of the AGC or Les Rehbeli, chair of the IIAC. If you have any questions or comments on technical detail, please contact, as applicable, the chairs of the Committee on Life Insurance Financial Reporting, the Property and Casualty Insurance Financial Reporting Committee, or the Committee on Worker's Compensation. These individuals can be reached at their email addresses on the CIA website or by contacting the CIA head office at guidance.feedback@cia-ica.ca.

SWE, LR

**Preamble: CIA Clarifications to IAN 100:**

The following clarifications to the IAN 100 are needed. These are categorized in sequential order, by chapter:

**Section A – Introduction to the General Measurement Approach**

1. **Section A – Introduction to General Measurement Approach, bullet point (d):**

   This section states that "the illiquidity risk may be included in the discount rate, or alternately, […] as part of the risk adjustment".

   The illiquidity **premium** (emphasis added) for a group of insurance contracts would be included in the discount rate. Any illiquidity risk arising from **uncertainty** in the timing of projected liability cash flows would be included in the risk adjustment for non-financial risk (RA).

   This section also states that "treatment of any asset liability mismatch allowance / reserve could be included in the discount rate or the risk adjustment". IFRS 17 does not include any allowance for mismatch risk (except to the extent consistent with the observable market prices). Refer instead to Q4.3, which states that mismatch risk should be excluded from fulfilment cash flows (FCF).

**Chapter 2 – Estimates of Future Cash Flows**

2. **Q 2.13 – How are premiums prepaid with interest accretion treated?**

   This question refers to paragraph 27 in IFRS 17, which has been deleted. See paragraph B66A instead.

3. **Q 2.22 – Which cash flows other than claims payments and contractual services may be considered?**

   The second paragraph says "The accounting interpretation of this phrase might, however, result in the need to choose the partition of the business into portfolios suitably to allow an adequate split of currently incurred and future expected costs between those 'directly attributable' to a portfolio and general overhead that is not considered in measurement and presentation of insurance contracts. This is a potentially disputable situation, and there are several possible ways of resolving the situation."

   The IFRS 17 definition of portfolio is contracts with "similar risks managed together". The entity's management of expenses and expense allocations may or may not be relevant to the identification of portfolios.

**Chapter 3 – Discount Rates**

4. **Q 3.27 – How are cash flows, that do vary based on the returns of any underlying items, discounted?**

   The answer states that "Under (ii), cash flows are adjusted for the effect of that variability. Again, if the dependence is linear, one might project cash flows using investment returns implied by a deterministic risk-free rate (or curve). In that case, the discount rate (or curve) to be used shall also be on a risk-free basis."

The key point of this portion of the response is noted in the following paragraph, specifically that "the discount rate is consistent with the rate used for the cash flow projection". Using the risk-free rate (or curve) for both projecting and discounting is one example of a situation. An illiquidity premium could be added to the projection rate(s) and discount rate(s) (or curve) in this situation.

5. **Q 3.38 – Which discount rate is used to measure adjustments that adjust the CSM?**

   The answer provided is that it is the discount rate at initial contract recognition **for cash flows that do not vary with the returns on any underlying items** (emphasis added)**.**

   Paragraph B72(c) says only "discount rates applying paragraph 36 […] determined on initial recognition", which may or may not vary with the returns on underlying items.

6. **Q 3.42 – Which discount rate is used for the amortization of loss component?**

   The answer to this question states that "With respect to the discount rate used for the amortization, IFRS17 does not provide guidance. This discount rate might be chosen equal to the locked in rate at inception. It might also be a locked in rate at the moment that the group of insurance contracts becomes onerous."

   This paragraph implies that the choices are limited to locked in rates. However, since IFRS 17 provides no guidance on the matter, current rates might also be used for this purpose.

**Chapter 4 – Risk Adjustment for Non-Financial Risks**

7. **Q 4.17 – What are appropriate methods to allocate risk adjustments calculated at a more aggregated level to a more granular level?**

   The third paragraph says "In some cases, the entity may choose to initially calculate the risk adjustment at a level that incorporates some groups valued under the general measurement approach and others where the liability for remaining coverage is determined under the PAA, i.e., **there is no risk adjustment for the PAA liability for remaining coverage** [emphasis added]. In such cases, there will still be a portion of the risk adjustment attributable to the present value of the future cash flows from unpaid claim liability associated with the PAA groups."

   For greater clarity, a risk adjustment should be considered when calculating the loss component of an onerous group measured under the PAA.

**Chapter 5 – Level of Aggregation**

8. **Q 5.11 – Are portfolios fixed for all times?**

   The answer states that "A contract is required to be assigned to a group (which is a subset of a portfolio) at initial recognition of the contract, and therefore portfolios **may not cut across groups**" (emphasis added).

   The assignment of contracts to groups can never change, but portfolio definitions can change, and therefore, portfolios may cut across groups over time.

9. **Q 5.29 – What are the implications of aggregation for presentation and disclosure?**

   The second paragraph states that "Paragraph 78 requires the separate presentation of the portfolios of contracts that are issued as assets and that are issued as liabilities."

   The words "issued as" are not in paragraph 78 of IFRS 17. The requirement is for the separate presentation of portfolios of contracts that are assets versus liabilities at each reporting date, regardless of their status at the issue date.

10. **Q 5.30 – How are business combinations and portfolio transfers treated?**

    The answer states that "For intra-group transfers, if it is assessed as a transfer that is not an IFRS 3 business combination, paragraph B93 does not apply. (paragraph 39)."

    According to paragraph 39, paragraph B93 applies to transfers that are not an IFRS 3 business combination. To avoid confusion, for such transfers that are intra-group, paragraph B93 would apply in the unconsolidated statements of the acquiring entity, but paragraph B93 would not apply to the consolidated statements of the group, because there is no transfer at the consolidated level.

**Chapter 6 – Contractual Service Margin and Loss Component**

11. **Q 6.2 – How is the CSM determined at initial recognition?**

    The second paragraph says, "This negative liability is eliminated at contract inception by the creation of a CSM…"

    In this context, "contract inception" means the date of initial recognition of the contract (rather than the issue date).

12. **Q 6.19 – When does the coverage period start and end?**

    The third paragraph gives the example of stop-loss reinsurance, and states that since a reinsurance claim is only triggered when the total claims exceed an attachment point, the coverage, "starts from the point at which a valid claim could be made under the contract and not the underlying individual events."

    The beginning of the coverage period depends on the terms and conditions of the reinsurance contract.

13. **Q 6.25 – What is required to use and the implications of using the financial risk mitigation option?**

    The second last paragraph states that "An entity can choose to apply the option of not adjusting the CSM for some changes in the fair value of underlying items (paragraph 45(b)(i)) or the fulfilment cash flows relating to future service (paragraph 45(c)(i)) if it uses derivatives, non-derivative financial instruments at fair value through profit or loss, or reinsurance contracts held to mitigate the financial risk arising from the insurance contracts, and paragraph B115 applies."

    For greater clarity, an entity cannot choose to apply the risk mitigation option for non-derivative financial instruments used to hedge financial risk of the entity's share of underlying items.

14. **Q 6.26 – What is an onerous group and how are they treated in profit and loss?**

    The answer states that a contract could become onerous after initial recognition if there are "unfavorable changes in the fulfilment cash flows allocated to the group arising from changes in estimates of **future cash flows** [emphasis added] relating to future service."

    A contract could also become onerous after initial recognition if there are unfavourable changes in the risk adjustment for non-financial risk relating to future service.

15. **Q 6.28 – What is a loss component?**

    The answer states that "changes in the loss component are recognized as positive or negative insurance expenses."

    For clarity, only changes in the loss component that correspond to changes in the liability for remaining coverage are recognized as positive or negative insurance service expenses. This is the case for all changes in the loss component for groups measured under the premium allocation approach. However, under the general measurement approach, changes in the loss component made under paragraph 50(a) do not correspond to changes in the liability for remaining coverage and therefore are not recorded in insurance service expenses.

**Section B – Variations to the General Measurement Approach**

16. **Section B - Variations to the General Measurement Approach**

    With respect to the application of the variable fee approach (VFA) method, the section states that "As discussed in Chapter 8, the circumstances as to when the VFA may be used are not always straightforward especially for contracts with direct participation features which may well vary by jurisdictions. Although not insurance contracts, investment contracts with discretionary participation features are in scope of IFRS 17 'provided they are issued by an entity that also issues insurance contracts.' **If so, these contracts are measured in the same way as Contracts with Direct Participation Features**." (Emphasis added.)

    Investment contracts with discretionary participation features do not automatically or necessarily meet the definition of insurance contracts with direct participation features. Paragraph B101 is applied to make this determination.

**Chapter 7 – Premium Allocation Approach**

17. **Q 7.9 – What is the initial measurement approach to the liability for remaining coverage?**

    The answer cites paragraph 55a(iii), but the quoted reference is from the May 2017 version of IFRS 17 rather than the June 2020 final. The final 55a(iii) is:

    "plus or minus any amount arising from the derecognition at that date of:

    1. any asset for insurance acquisition cash flows applying paragraph 28C; and

    2. any other asset or liability previously recognised for cash flows related to the group of contracts as specified in paragraph B66A"

18. **Q 7.13 – How should the liability for incurred claims be measured for contracts measured under the PAA?**

    The first sentence should state that "the PAA generally uses the measurement approach for the liability for **incurred claims** under the GMA" (original answer refers to "liability for remaining coverage" instead of "liability for incurred claims").

19. **Q 7.14 – When and how should an onerous contract be recognized?**

    The answer states that "Referring to paragraph 18, unless there are facts and circumstances indicating that the **portfolio** [emphasis added] is onerous, it is not necessary to assess whether any contracts are or may become onerous."

    The word "portfolio" in this sentence is a typo and should be replaced with word "**group**." The assessment referred to in paragraph 18 is made at the group level, not the portfolio level.

**Chapter 8 – Contracts with Participation Features and Other Variable Cash Flows**

20. **Q 8.1 – What are the types of participating contracts?**

    With respect to part (b) of the answer to this question, as noted above, investment contracts with discretionary participation features do not automatically or necessarily meet the definition of insurance contracts with direct participation features. Paragraph B101 is applied to make this determination.

21. **Q 8.26 – what is the Other Comprehensive Income (OCI) option?**

    The answer includes the following paragraph: "For contracts where financial risk has a substantial effect on the amounts paid to policyholders (i.e., most participating contracts), there is specific guidance for systematic disaggregation. The disaggregation eliminates accounting mismatches with income or expenses included in profit or loss on the underlying items held (paragraph 89)".

    For greater clarity, paragraph 89 only applies to insurance contracts with discretionary participation features where the entity holds the underlying items.

**Chapter 9 – Reinsurance**

22. **Q 9.8 – How is measurement (i.e. CSM) impacted when there is reinsurance held against a group of underlying insurance contracts that are onerous?**

    The answer states: "Where an entity recognizes a loss on a group of underlying insurance contracts because the underlying insurance contracts are onerous, the entity is required to offset this by recognising a gain on reinsurance contracts held."

    For clarification, the recognition of this offset is subject to two conditions: (1) there is an expected recovery of claims on the underlying contracts from the reinsurance contracts held (technically based on the probability-weighted scenarios of claims), and (2) the relevant reinsurance contracts held are recognized on or before the recognition of the underlying insurance contracts.

23. **Q 9.11 – How is counterparty risk of non-performance by the issuer of reinsurance contracts reflected in reinsurance contracts held?**

    The final paragraph of this answer addresses whether risk adjustment should include any adjustments for counterparty non-performance risk. The answer notes that since counterparty non-performance risk is not transferred to the reinsurer, the risk adjustment would not include an adjustment for this risk. However, an alternate view is also presented, which states that the risk adjustment could include such an adjustment. Discussions of the Transition Resource Group (TRG) of the International Accounting Standards Board indicated that this alternative view is not supported. Reinsurer non-performance risk affects the present value of estimates of future cash flows of the group of reinsurance contract held and not the risk adjustment for non-financial risk of the group of reinsurance contracts held.

**Chapter 11 – Business Combinations and Portfolio Transfers**

24. **Q 11.3 – What are the general requirements for determining if a transaction is a business combination?**

    The answer gives an outdated definition of business (taken from an earlier version of IFRS 3). The definition of a business per IFRS 3, effective 2020 and later, is: "An integrated set of activities and assets that is capable of being conducted and managed for the purpose of providing goods or services to customers, generating investment income (such as dividends or interest) or generating other income from ordinary activities."

25. **Q 11.6 – What are the requirements of IFRS 17 for insurance contracts acquired in a business combination or in a transfer of contracts that do not form a business?**

    The answer states: "… Hence, any positive difference between the fair value and the fulfillment cash flows of claims liabilities acquired in a business combination or in another transfer is deferred and released into income over the coverage period (i.e., **the period over which the acquirer is obligated to settle the claims**)." (Emphasis added.)

    Per IFRS 17 paragraph B5: "Some insurance contracts cover events that have already occurred but the financial effect of which is still uncertain. An example is an insurance contract that provides insurance coverage against an adverse development of an event that has already occurred. In such contracts, **the insured event is the determination of the ultimate cost of those claims**." (Emphasis added.)

    Hence, the coverage period and the period of time over which the CSM is released for such contracts extends to the period of time until the financial effect of the claims is certain. If the date of certainty of the amount is achieved prior to the date of actual claim payments, then the coverage period would end before claims are settled and paid.

26. **Appendix to Chapter 11 (Business Combinations and Portfolio Transfers)**

    **What is the guidance in IFRS 3 for recognizing and measuring identifiable assets acquired and liabilities assumed in a business combination?**

    This appendix includes additional information about IFRS 3 which is intended to be helpful. However, this appendix was based on an outdated version of IFRS 3. The latest version of IFRS 3 was updated in 2021 (IFRS - IFRS 3 Business Combinations).

    **What are some examples of intangible assets arising from a business combination involving contracts in the scope of IFRS 17, and what are the accounting requirements?**

    The list provided in this answer includes "value of liability guarantees."

    The "value of liability guarantees" is not an example of an intangible asset. Rather, the market's view of the cost of providing such guarantees is included directly in the IFRS 17 fulfilment cash flows.

**Chapter 12 – Transition**

27. **Q 12.22 – What transition requirements are different for groups of contracts measured using the premium allocation approach?**

    The first sentence states that "For the liability for remaining coverage, there is no risk adjustment or CSM or loss component to be determined at transition."

    While this is normally expected to be the case, members should note that if facts and circumstances indicate that the group is onerous, there would be a risk adjustment (though no need to identify it separately) and a loss component.

28. **Q 12.36 – How is the CSM or loss component measured at transition date under the modified retro approach?**

    The answer provides a list of modifications that may be permitted, which includes that "loss recovery components may be included under the modified approach if better information is not available". This conflicts with the answer to Q12.37, which states that the entity shall not identify a loss recovery component for the group of reinsurance contracts held, in the absence of reasonable and supportable information.

    The answer provided in Q 12.37 covers the measurement of the loss recovery component for reinsurance contracts held at transition.

29. **Q 12.37 – When should a loss component for reinsurance held be determined?**

    The question should read "When should a loss-**recovery** component for reinsurance contracts held be determined?".

**Chapter 15 – Introduction and Explanation of Key Terms Relevant to the Financial Reporting of (Re)insurance Contracts Issued and Reinsurance Contracts Held**

30. **Q 15.1 – What is meant by the term "presentation" in an IFRS 17 context?**

    The answer to this question refers to paragraph 10 of IAS 1, which defines what a complete set of financial statements comprises.

However, the answer provided is incomplete, because it does not also reference the Notes to the Financial Statements, which (per IAS 1, paragraph 10) is a key component of the financial statements.

This is an important clarification, as it is relevant in defining the minimum requirements for "interim financial statements" in the context of paragraph B137.

**Chapter 16 – Presentation Requirements Outlined in IFRS 17 Insurance Contracts**

**31. Q 16.11 – How should an entity treat exchange differences on changes in the carrying amount of groups of insurance contracts?**

The answer states that "The entity should include exchange differences on changes in the carrying amount of groups of insurance contracts in the P&L, unless they relate to changes in the carrying amount included in OCI, in which case they should be included in OCI (paragraph 92)."

For clarity, exchange differences can also affect the CSM (per paragraphs 44d and 45d).

**Chapter 17 – Disclosure Requirements Under IFRS 17 Insurance Contracts**

**32. Q 17.29 – What information about claims development must be disclosed?**

The answer to this question refers to paragraph 130 which states the requirement to disclose of claims development over a ten-year period.

However, as a transition measure per paragraph C28, an entity need not disclose previously unpublished information about claims development that occurred earlier than five years before the end of the annual reporting period in which it first applies IFRS 17. However, it an entity does not disclose that information, it shall disclose that fact.

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## Introduction

This IAN has been written to assist actuaries in complying with IFRS17 and ISAP 4, by offering practical examples of ways in which actuaries might implement the ISAP and IFRS17 in the course of their work. This IAN is organised into five sections and 17 self-standing chapters, discussing the main topics of IFRS 17. Each section has a brief introduction to the topics contained in that section. It is written as a series of questions and answers.

This IAN is based on the standard issued in May 2017 and the amendments published in June 2020. It also reflects some of the discussions held at the Transition Resource Group (TRG) meetings held in 2018 and 2019. This document will be revised in the future to reflect any future changes to the standard by IASB.

**What are International Financial Reporting Standards?**

International Financial Reporting Standards (IFRSs[1]), as issued by the International Accounting Standards Board (IASB), are intended to serve as guidance for developing general purpose financial statements and other financial reporting on a globally accepted basis.[2] General purpose financial statements are an important source of information for investors and other users to make economic decisions.

IFRSs are focused on general purpose financial statements of consolidated groups of enterprises but are equally applicable to single societies or companies, be they profit-oriented entities or not-for-profit organisations such as mutual insurance companies. Financial reports in compliance with IFRSs (IFRS reports) may be prepared voluntarily or their provision may be required, e.g., by state or stock exchange regulations. To be able to make an explicit and unreserved statement of compliance with IFRSs, the financial report needs to comply with all requirements of the relevant IFRSs.[3] The contents of a complete IFRS report are determined in IAS 1.10.

Some IFRSs are generally applicable (e.g., IAS 1 and IAS 8), some refer to specific circumstances (e.g., IAS 27, IAS 34, IFRS 1, or IFRS 10) whilst others refer to specific subjects (e.g., IAS 19, IAS 37, IFRS 9, IFRS 15, or IFRS 17) and are accordingly of more or less relevance for specific activities within the preparation of an IFRS report, but considering the need to be in compliance with all IFRSs as noted before.

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[1] IFRSs refers to the ensemble composed by each individual International Financial Reporting Standard (IFRS), as issued by the IASB since 2001, and by each individual International Accounting Standard (IAS), as issued by IASB's predecessor IASC before 2001, by each International Financial Reporting Interpretation Committee Interpretation (IFRIC), as issued by IASB, and by each individual Standard Interpretation Committee Interpretations (SIC), as issued by IFRIC's predecessor SIC. All these terms are registered trademarks owned by the IFRS Foundation, owning the copyright as well of all IFRSs.

[2] IASB, Preface to International Financial Reporting Standards (PRE), September 2010, PRE.6–7.

[3] PRE.15 and IAS 1.16.

**What is IFRS 17– Accounting for Insurance Contracts?**

The project to develop authoritative guidance for accounting for insurance contracts in IFRS reports began in 1997. After introducing an interim standard, IFRS 4, in 2002, applicable from 2004 onwards, which allowed a wide scope of accounting approaches to continue to be applied, IASB completed the project in 2017 by issuing IFRS 17 – Insurance Contracts. Following feedback and consultation the IASB published amendments in June 2020. IFRS 17 is to be applied for all periods commencing on or after 1 January 2023 at the latest.

IFRS 17 provides authoritative guidance whether or to what extent items are within the scope of IFRS 17 (subsequently referred to as "classification") and about recognition, measurement, presentation and disclosure of items within the scope of IFRS 17. IFRS 17 covers insurance contracts, whether issued directly or acquired in the form of reinsurance contracts assumed by the entity. Rights and obligations of policyholders of direct insurance contracts are not within the scope of IFRS 17.

The scope of IFRS 17 refers mainly to insurance contracts, as defined in IFRS 17, as contracts transferring significant insurance risk, irrespective of the laws or regulation of the respective jurisdiction which might classify and regulate other contracts as insurance contracts. Special inclusions or exclusions of some forms of contracts which might meet the defining criteria are provided. Investment contracts with discretionary participation features are also covered by IFRS 17.

Recognition follows typical accounting practice but, in some cases, permits the recognition of future premiums that do not represent a current enforceable right of the entity. For that purpose, IFRS 17 introduces a concept referred to as contract boundary (see Chapter 1) describing whether a future non-enforceable premium and corresponding obligations might be anticipated or not in the measurement of the contract.

**How is the insurance contract measured?**

The measurement under IFRS 17 requires the determination of a current value of the insurance contract, considering market perspectives for financial risks and the reporting entity's perspective for all other risks, in IFRS 17 referred to as the fulfilment cash flows. This current value is the basis of the measurement of the insurance contract and is to be disclosed. The disclosures include its conceptual parts, the unbiased estimate of the expected value of future cash flows, which is adjusted for the time value of money and further adjustments applied for financial risks and non-financial risks.

At the outset a contractual service margin (CSM) is established to offset any gain, if any, at initial measurement – that is the value of premiums in excess of the value of obligations. This is then recognized as revenue over the period providing coverage. While there is no unit of account defined for the fulfilment cash flows, the unit of account for the CSM are partitions of at least annual cohorts, based on at least three different profitability categories, which are part of annual new business ,and form the unit of account of the CSM.

The described main approach of IFRS 17 is referred to in this IAN as general measurement approach (GMA). IFRS 17 allows for a simplified alternative approach to be used for contracts of

short coverage period (typically not more than 12 months), known as the premium allocation approach (PAA). Entities may use the PAA if it is a reasonable approximation to the GMA regardless of duration. The PAA is similar to the unearned premium method in that the measurement of the liability for remaining coverage of short duration contracts might be simplified by distributing premiums over the coverage period in line with passage of time or in proportion to expected benefits. The PAA mainly applies to the part of the total measurement of the contract referred to as liability for remaining coverage, with the liability of incurred claims following the GMA; however, further simplifications for the liability for incurred claims are available under certain circumstances.

Special guidance, sometimes referred to as variable fee approach (VFA), applies for certain contracts whose benefits are determined based on indices or other underlying items like surplus (i.e., insurance contracts with direct participation features). It includes a feature distributing the entity's share in changes of financial risk and incurred events over the remaining coverage period of the contract.

Reinsurance ceded contracts, referred to as reinsured contracts held in IFRS 17, are measured separately from the underlying ceded contract, with special guidance for the CSM.

**How do insurers present profit or loss statements when applying IFRS 17?**

The statement of financial performance (profit or loss) is expanded by a section for the insurance service result. This contains as insurance revenue any release of cash flows, except those from investment components, risk adjustments for non-financial risk, and CSM from the liability for remaining coverage for the respective period as far as originally resulting from premiums. Actual benefits and expenses of the period, including changes in the liability for incurred claims, but excluding any investment component paid, are presented as insurance service expenses. Under the GMA, changes in the effect of discounting and any other effect of financial risk are presented as insurance finance income or insurance finance expenses in the financial result. There is an accounting policy choice to present the effect of changes due to financial risk directly in equity (other comprehensive income), potentially avoiding/reducing volatility in the statement of financial performance.

**Which specific disclosure and transition requirements are included in IFRS 17?**

IFRS 17 includes requirements to disclose information about the amounts recognized in the IFRS report, particularly requiring reconciliations of presented amounts, significant judgment in determining those figures, including disclosures of the applied discount rate curves and a quantification of the risk adjustment for non-financial risk and CSM, and the nature and extent of the risks from the covered contracts.

In applying IFRS 17 for the first time, the standard provides two alternative approaches for transition if the retrospective approach as required by IAS 8 is impracticable. These are a modified retrospective approach and a fair value approach. Separate disclosures are required for the different approaches.

There is not a separate chapter on disclosure in this IAN. Rather, disclosure is discussed in Section E and in various chapters as relevant.

**References to IFRS 17**

In this IAN the use of the phrase "paragraph X" etc. is a reference to paragraphs in IFRS 17. Where paragraphs from other IASs/IFRSs are referenced (e.g., paragraph 28 of IFRS 13) then that international standard is stated.

In conjunction with IFRS 17, the IASB has published illustrative examples to IFRS 17. The document contains 18 examples applying IFRS 17 to hypothetical situations. Paragraph numbers in the illustrative examples to IFRS 17 are prefixed "IE".

Interpretations are issued from time to time by the IASB. At the time of drafting this IAN there are no interpretations relating to IFRS 17 but one or more could be issued in the future.

In this IAN reference is sometimes made to "BC" paragraphs from the IASB "Basis for Conclusions" which accompanied IFRS17, including the amendments, when it was published. Those paragraphs together with any staff papers issued for TRG meetings and discussion thereon which are also referred to in this IAN, should not be considered as authoritative guidance. Rather they may be considered as background or supporting material.

In this IAN where the words "must" or "should" are used only as specific references to an explicit requirement of IFRS 17, not as guidance from the IAA.

Materiality, in an accounting sense, is a principle that essentially creates a boundary between issues that have an effect on the outcome in an accounting sense and those that have no discernable effect. Judgment is required in determining this boundary, which affects that scope and extent of actuarial analysis.

The following comes from ISAP 1:

*In case of omissions, understatements, or overstatements, the actuary should assess whether or not the effect is material. The threshold of materiality under which the work is being conducted should be determined by the actuary unless it is imposed by another party such as an auditor or the principal. When determining the threshold of materiality, the actuary should:.*

- *Assess materiality from the point of view of the intended user(s), recognizing the purpose of the actuarial services; thus, an omission, understatement, or overstatement is material if the actuary expects it to affect significantly either the intended user's decision-making or the intended user's reasonable expectations;*
- *Consider the actuarial services and the entity that is the subject of those actuarial services; and*
- *Consult with the principal if necessary.*

**Proportionality**

Proportionality, in an accounting sense, is a principle that determines that the appropriate weights are given to all influences on accounting measures. Again, actuarial judgment has a major influence.

**Illustrative Examples**

In this IAN some examples are provided to help ease of understanding of the topic. It should be remembered that these examples are for illustrative purposes only and each case needs to be considered on its own merits.

**Overview of the Sections and Chapters of this IAN for IFRS 17**

**Chapter 1 on Classification of Contracts and Contract Boundaries**

This chapter considers approaches to the classification required by IFRS 17, including the identification of contracts, the scope of IFRS 17, and contract boundaries. It refers to other chapters in IAN 100 addressing further specific classifications.

**Section A – The General Measurement Approach**

**Chapter 2 on Estimates of Future Cash Flows**

This chapter considers the requirements for determining the estimates of future cash flows whether they be to calculate liabilities for remaining coverage or liabilities for incurred claims. It discusses issues such as which cash flows would typically be included, how those cash flows might be estimated, how the term "current estimate" is defined, or what does it mean to be unbiased. The chapter also refers the reader to the IAA's monographs on current estimates[4] and on stochastic modelling[5]. This chapter does not discuss the cash flows particular to contracts with participating features or other variable cash flows which are discussed in chapter 8.

**Chapter 3 on Discount Rates**

This chapter considers the time value of money in the measurement of future cash flows and financial risk. It discusses both the "top down" and "bottom up" approaches referred to in IFRS 17 for determining yield curves. The chapter refers to the estimation of risk-free rates, the decomposition of credit and liquidity risks, extrapolation of yield curves, and investment-related expenses. The roles of the discount rate in the measurement of cash flows varying with underlying items, the determination of interest expense and the interest to be accreted on the CSM are also considered.

**Chapter 4 on Risk Adjustment for Non-Financial Risks**

This chapter considers the criteria for, and measurement of, the risk adjustment for non-financial risk required as part of the general measurement approach under IFRS 17 including the purpose and general requirements of the risk adjustment, what risks would typically be covered, and specific considerations in determining the risk adjustment. This note discusses how to reflect risk mitigation as risk mitigation in a pool, diversification, risk sharing, catastrophic and other infrequent events, qualitative risks considerations, use of different approaches by line of business, and general considerations in selecting and calibrating a risk adjustment approach. For detailed risk adjustment methods and how to apply them, reference

[4] *Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins*
[5] *Stochastic Modelling – Theory and Reality from an Actuarial Perspective* (actuaries.org)

is made to the IAA monograph on risk adjustments [6]. This chapter also covers high-level disclosure requirements including confidence level disclosure, and issues around allocation of risk adjustments to a lower level.

**Chapter 5 on Level of Aggregation**

This chapter considers the appropriate level of aggregation when accounting for business under IFRS 17. Amongst other considerations this includes the determination of the unit of account and the setting of portfolios and groups to meet IFRS 17 needs.

**Chapter 6 on Contractual Service Margin and Loss Component**

This chapter considers the requirement under IFRS 17 to set up a contractual service margin (CSM) at outset for each group of insurance contracts, including how it should be determined, the subsequent measurement, including the allocation of revenue to future periods in line with the provision of services, and the treatment of the loss component for "onerous contracts".

**Section B – Variations to the GMA**

**Chapter 7 on Premium Allocation Approach**

This chapter considers the use of the premium allocation approach (PAA) under IFRS 17 including the criteria to be met for an insurance contract to choose this method, the measurement approach, and the differences between this approach and the general measurement approach. The chapter focuses on the "liability for remaining coverage". The measurement of the contract liability from the point of occurrence of an insured event includes the "liability for incurred claims" which follows the requirement of the general measurement approach discussed in other chapters.

**Chapter 8 on Participation Features and Other Variable Cash Flows**

This chapter considers the recognition, measurement and presentation of participating features, particularly in the case of contracts with direct participation features, as well as for other cash flows subject to the discretion of the insurer or linked to indices, including the criteria to be met for those classifications.

**Chapter 9 on Reinsurance**

This chapter considers the treatment of reinsurance, both held (ceded) and assumed, under IFRS 17, including how to determine if IFRS 17 is applicable to specific reinsurance transactions. It discusses issues related to the separate presentation and valuation of the reinsurance ceded from associated underlying (ceded) contracts, and considerations in determining the estimate of future cash flows, risk adjustments and CSM and allowance for counter party risk on reinsurance ceded. Similar issues are covered for reinsurance assumed.

[6] *Risk Adjustments for Insurance Contracts under IFRS 17* (actuaries.org)

**Section C – Uses of Fair Value Measurement in IFRS 17**

**Chapter 10 on Fair Value**

This chapter considers the use of the fair value measurement of insurance contracts for IFRS 17 including for business combinations or portfolio transfers and on transition if the fair value approach is chosen.

It discusses the determination of the fair value of insurance contracts in the context of the more general guidance on fair value measurement found in *IFRS 13 Fair Value Measurement* and of common insurance industry practices.

**Chapter 11 on Business Combinations and Portfolio Transfers**

This chapter considers the requirements under IFRS 17 when accounting for insurance contracts or liabilities for incurred claims acquired in a business combination or a portfolio transfer, and in particular the need to use the fair value of the contracts as the initial consideration. This chapter considers the interaction between IFRS 17 and the more general guidance found in *IFRS 3 Business Combinations* and discusses aspects of business combinations, such as the determination of goodwill and the recognition of intangible assets.

**Chapter 12 on Transition**

This chapter considers the one-time event of presenting statements applying IFRS 17 for the first time. It has four sections: an overview and then a section for each of the three transition methods described in IFRS 17 – the retrospective approach of IAS 8 and the alternative approaches introduced by IFRS 17, modified retrospective and fair value. The chapter has a sample timeline. It also references content from chapter 10 on fair value.

**Section D – Other IFRS 17 Topics**

**Chapter 13 on Embedded Derivatives**

This chapter considers the requirements under IFRS 17 for the separation of certain derivatives embedded in contracts subject to the scope of IFRS 17. This chapter discusses the issues that may arise in detecting and identifying embedded derivatives in such contracts which may need to be separated. Further information about embedded derivatives based on other IFRSs is found in the existing IAN 10 Embedded Derivatives.

**Chapter 14 on Contract Modifications**

This chapter considers the treatment under IFRS 17 of contract modification to insurance contracts, including reinsurance contracts, derecognition, and transfer to third parties. It discusses what constitutes a contract modification and what can be simply treated as a change in estimate.

The chapter describes approaches for determining the deemed premium when treated as a cancellation and replacement of the original contract as well as the application under the PAA. The approaches applicable to future contractual cash flows to be considered due to a prior contract boundary are also outlined.

It also discusses when and how contracts can be derecognised.

**Section E – Measurement, Presentation and Disclosures**

**Chapters 15–17**

These chapters consider the general requirements for presentation of financial information under IFRS contained in IAS 1 as well as the specific additional requirements in IFRS 17. It also provides general comments on the disclosures required to explain the presentation such as the required reconciliations. Additionally, these chapters discuss the additional requirements of IFRS 17, including what constitutes revenue and expenses, how experience variances are presented, what is to be reported in the statement of financial performance versus other comprehensive income, the level of aggregation to be used in presentation and disclosure, and required reconciliations.

## Chapter 1 – Classification of Contracts

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality.

**1 A. What does this chapter address?**

This chapter considers the scope of IFRS 17, the identification and boundary of insurance contracts, separation of components and combination contracts, and level of aggregation under IFRS 17 and contract boundaries. This chapter refers to other chapters that address further specific classifications.

**1.B. Which sections of IFRS 17 address this topic?**

Paragraphs 2-24, 34-35, 62, 72-74, Appendix A, paragraphs B3-B27, B31-32, B61, B64, C10, C21, and C23 provide guidance on this topic.

Paragraphs BC 22, BC42-44, BC79, BC85, BC100, BC114, BC117, BC119, BC136, and BC160 also provide background on the subject.

**1.C. What other IAA documents are relevant to this topic?**

None

### Scope of IFRS 17

**1.1. Which contracts are covered under IFRS 17?**

Paragraph 3 states that the contracts within the scope of the standard are:

- Insurance contracts (including reinsurance contracts) an entity issues;
- Reinsurance contracts an entity holds; and
- Investment contracts with discretionary participation features an entity issues, provided the *entity also issues insurance contracts* [emphasis added].

The definition of an **insurance contract** is the same as under IFRS 4 and can be found in Appendix A of IFRS 17.

*"A contract under which one party (the issuer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder."*

Insurance contracts held by an entity (i.e., as a policyholder), which are not reinsurance contracts held, are not, however, within the scope of IFRS 17 (see paragraph 7(g)).

While IFRS 4 used the phrase "*financial instruments with discretionary participation features"*, IFRS 17 refers instead to *"investment contracts with discretionary participation features"*. The definition of this term in Appendix A refers in turn to "financial instruments" and so is very similar to that used in IFRS 4.

Appendix A also defines "i*nvestment contracts with discretionary participation features*" as

*A financial instrument that provides a particular investor with the contractual right to receive, as a supplement to an amount not subject to the discretion of the issuer, additional amounts:*

*(a) that are expected to be a significant portion of the total contractual benefits;*

*(b) the timing or amount of which are contractually at the discretion of the issuer; and*

*(c) that are contractually based on:*

*(i) the returns on a specified pool of contracts or a specified type of contract;*

*(ii) realised and/or unrealised investment returns on a specified pool of assets held by the issuer; or*

*(iii) the profit or loss of the entity or fund that issues the contract.*

**1.2. What is the definition of insurance risk under IFRS 17?**

As noted in 1.1 above, Appendix A of IFRS 17 defines an insurance contract in terms of acceptance of "*significant insurance risk*". **Insurance risk** is defined in Appendix A of IFRS 17 as "*risk, other than financial risk, transferred from the holder of the contract to the issuer*". Paragraphs B7–B16 provide guidance on what is insurance risk is when applying this definition.

**Financial risk,** as defined in Appendix A of IFRS 17, includes non-financial variables provided they are not specific to the insurer or policyholder. Paragraph B8 explains financial risk and provides examples.

Even if a financial variable is used in determining the size of a payment, if the payment is significant and dependent upon the occurrence of an insured event, then the contract is an insurance contract (see paragraph B10). An example of this is an index-linked life insurance cover where the insured death benefit is the difference between the value of the units and the specified death benefit.

An insured event is defined in Appendix A of IFRS 17 as "An uncertain future event covered by an insurance contract that creates insurance risk." Paragraphs B3–B5 provide guidance on what "an uncertain future event" is when applying this definition.

The uncertainty can relate to one or more of the probability, timing, or size of the event. Hence, uncertainty includes cases where the event has already occurred, but the timing or size of the compensation remains uncertain.

As per paragraphs B11-B15, the insurance risk must have an adverse effect on the policyholder and is transferred to the insurer by the insurance contract. Therefore, the policyholder should already be exposed to this risk before the insurance contract is created (see paragraph B11). For the reasons above, lapse, persistency, and contract expense risks arising from a contract are not insurance risks.

However, a contract issued to an entity to cover risks such as lapse, persistency, or contract expenses on that entity's existing portfolio is, according to paragraph B15, expected to meet the definition of an insurance contract for the issuer, while the client entity is the policyholder. Further, if the entity's existing portfolio includes insurance contracts, not just investment contracts, then such a contract also likely to qualify as reinsurance held for the policy holding entity. If there are no insurance policies in the portfolio, the contract does not fall under IFRS 17 for the entity.

This adverse effect of the uncertain event on the policyholder is a necessary contractual precondition for a contract to meet the definition of an insurance contract. Note this does not require the insurer to investigate if an adverse effect occurred but just to have the ability to deny compensation if such adverse effect does not exist (see paragraph B13).

The compensation can be a payment in kind by providing goods or services (see question 1.4).

**1.3. What is the definition of significant insurance risk?**

An insurance contract is only in scope of IFRS 17 if it transfers a significant amount of insurance risk to the entity (or reinsurer).

Insurance risk is only significant if there is at least one scenario with commercial substance where the compensation paid by the insurer has a discernible effect on the economics of the transaction disregarding the likelihood of that scenario. If commercial substance exists only in very unlikely scenarios, but the contract covers at least one of these scenarios, then this qualifies as being significant (see paragraph B18).

Insurance risk can already be significant even if the policyholder still has to opt for insurance cover in the future, if the insurer has no practical ability to set a price on the cover that fully reflects the risk of the contract. Also, an insurance contract remains an insurance contract even if the original insurance risk has expired, unless a specified contract modification has occurred (see paragraphs 72 and 74–77).

IFRS 17 requires that the compensation and its commercial substance be considered on a present value basis.

**1.4. What are examples of contracts that are covered under IFRS 17?**

Paragraph B26 gives a list of examples. Most of the items on the list were also on the one in IFRS 4.

**1.5. What are examples of contracts that are not covered under IFRS 17?**

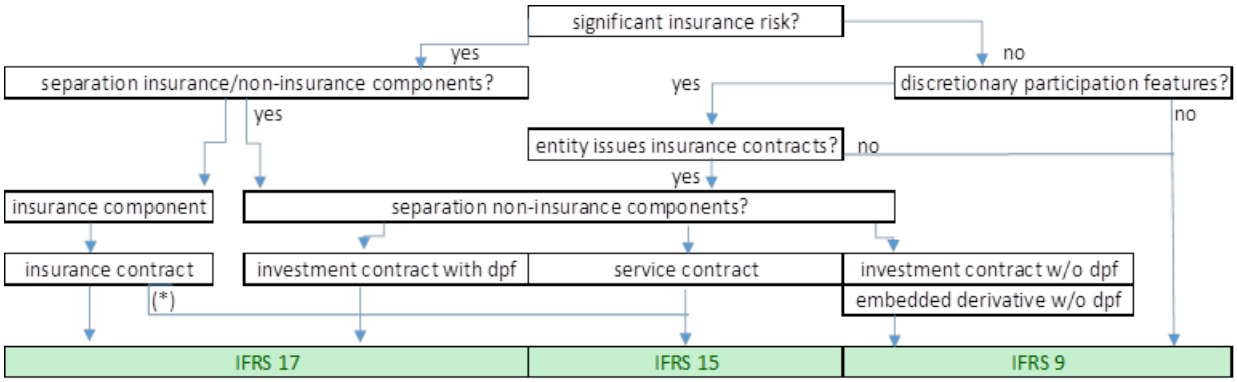
Paragraph 7 sets out contracts that are specifically excluded from the scope of IFRS 17 even if they meet the definition of an insurance contract. This list is similar to the one in IFRS 4; however, IFRS 17 now explicitly excludes residual value guarantees provided by a manufacturer, dealer, or retailer.

In addition, under paragraph 7(e), although financial guarantee contracts remain excluded from the scope of IFRS 17, an entity that has previously regarded such contracts as insurance contracts and applied insurance accounting on them, now has the option to

use IFRS 17 for such contracts. Otherwise, the IFRSs relating to financial instruments apply (IFRS 7, 9 and 32).

Paragraph B27 provides examples of contracts that do not qualify as insurance contracts. These are unchanged from IFRS 4, although in some cases they have been expanded upon.

The following schematic helps understanding which contracts fall under IFRS 17 or elsewhere.



*(*) IFRS17.8: optional for fixed fee service contracts*

Some contracts may not fall under IFRS 17, even though they involve significant transfer of insurance risk. For example:

- Product warranties may otherwise qualify as insurance contracts, but not when issued directly by the manufacturer. These fall under IFRS 15 or IAS 37.
- Life-contingent annuities and pensions may otherwise qualify as insurance contracts, but not when accounted for as part of employers' liabilities from an employee benefits plan or retirement plan. These fall under IAS 19 or IAS 26.

In addition, for some contracts that meet the definition of an insurance contract, but whose primary goal is to provide services for a fixed fee, paragraphs 8 and 8A give entities the option to choose between IFRS 17 and IFRS 15 if the contract meets all of the following criteria:

a) The entity does not reflect an assessment of the risk associated with an individual customer in setting the price of the contract with that customer;

b) The contract compensates the customer by providing services, rather than by making cash payments to the customer; and

c) The insurance risk transferred by the contract arises primarily from the customer's use of services rather than from uncertainty over the cost of those services.

An example of this type of contract could be roadside assistance.

### 1.6. Where does the scope of IFRS 17 differ from IFRS 4?

The examples in questions 1.4 and 1.5 include a comparison with IFRS 4.

According to paragraph 3, investment contracts with discretionary participation features are only in scope if the entity also issues insurance contracts. This additional condition is not in IFRS 4. Paragraph BC85 explains the rationale for this is that for the few entities that issue investment contracts with discretionary participation benefits but not insurance contracts, the costs of implementing IFRS 17 would outweigh the benefits.

### Separation of components from a contract

**1.7. When might components of a contract be accounted for separately?**

IFRS17 distinguishes between insurance components, embedded derivatives, investment components, and service components (see paragraphs 10-13).

Embedded derivatives are to be separated following the rules of IFRS 9. Derivatives that can be contractually transferred independently or have another counterparty are not embedded, but separate contracts.

Investment components are to be separated if and only if they are distinct, which means that *both* of the following conditions are met (paragraphs B31 and B32):

- The investment component is not highly interrelated with the insurance component; this means both that the entity is able to measure each component without considering the other components and policyholders can benefit from each component even if the other is not present (e.g., each component can lapse independently).
- The investment component appears after some reasonable research to be, or could be, sold separately in the same market or jurisdiction.

This means for instance that components that necessarily expire together (in case of a death or lapse/cancellation) or that are available in other markets but could not be provided separately in the own market, in general, would not be separated.

Service components are separated in line with paragraph 7 of IFRS 15 applying paragraph 12 of IFRS 17, but only after satisfying the requirements of paragraphs B33-35, and are measured under IFRS 15. To separate service components, fulfilment cash inflows and outflows would be attributed to either the insurance or service component, with a rational attribution for those cash flows that are not uniquely related to either of these two (see paragraph.12).

**1.8. What are examples of components that are often separated, but cannot be separated under IFRS 17?**

Some contract components may now be administered and/or reported separately but cannot be qualified as “distinct”. In these cases, IFRS 17 requires that the contract components are not separated from the insurance contract.

Paragraph BC114 gives policy loans that are a contractual feature as an explicit example of a component highly interrelated with the rest of the contract and therefore not separable in a non-arbitrary way.

## Contract boundary

The contract boundary distinguishes expected future cash flows to be considered in the measurement of the insurance contract from other future cash flows, even if these are also expected to be. The contract boundary determines where a contract ends for measurement purposes for a certain reporting period.

**1.9. What is the definition of a contract boundary under IFRS 17?**

Paragraph 34 defines the boundary of a contract for IFRS 17 measurement purposes.

> *"Cash flows are within the boundary of a contract if they arise from substantive rights and obligations that exist during the reporting period in which the entity can compel the policyholder to pay the premiums, or in which the entity has a substantive obligation to provide the policyholder with insurance contract services."*

Paragraph 71 does the same for investment contracts with discretionary participation features.

In June 2020, the Board amended the definition of a coverage [period to be the period during which the entity provides insurance contract services (see paragraphs BC283A-BC283J).

**1.10. What are "substantive rights and obligations"?**

Paragraph 2 makes it clear whereas *rights and obligations arise from contract, law, regulation or customary business practices, the enforceability of rights and obligations is a matter of law*.

IFRS 17 applies the term "substantive" to identify when future cash flows arising from those rights and obligations can be recognised as assets or liabilities. Accordingly, all clear cases of present enforceable rights or present enforceable obligations, as discussed in paragraph BC160 are within the contract boundary if they are substantive. Any terms that have no economic substance are disregarded.

According to paragraph 34, "cash flows are within the boundary of an insurance contract if they arise from substantive rights and obligations that exist during the reporting period in which the entity can compel the policyholder to pay the premiums or in which the entity has a substantive obligation to provide the policyholder with insurance contract services".

Cases where no party has any right may be outside the contract boundary (see paragraph BC160 (a)). This is particularly the case if both parties have an unlimited cancellation right or no party has a renewal right.

If the policyholder cannot be forced to pay the premium (e.g., if the policyholder is not obliged to renew a contract and the entity can refuse to renew a contract with an agreed duration), then any premiums after the agreed duration are not within the contract boundary.

A possible indication of a substantive obligation could be when the applicable terms and conditions can cause future cash flows to become onerous without the insurer having the ability to avoid such losses due to the absence of any cancellation or premium or benefit adjustment right. Typically, such situation would then also be reflected in the risk adjustment.

For example, in the case of a contractual clause that the funds of the contract might be used to purchase an annuity where the assumptions regarding longevity could be adjusted to represent the individual longevity risk but not beyond that, the annuity is normally not within the contract boundary because there is an element of repricing. If the terms and conditions determine a contractually fixed annuitization rate, however, then the entity is likely to be subject to a substantive obligation, and the loss-making annuitization of the funds might be anticipated considering the likelihood that the annuity will be elected.

This might also apply in cases where a premium component, with a unilateral right of the policyholder to pay the premium in future, includes minimum financial guarantees that are in the money at the reporting date and the adjustment clauses would not allow the entity to avoid that loss if the policyholder decides to pay the premium.

Paragraphs 34 (a) and (b) describe two alternative cases of when a substantive obligation finish. Accordingly, to show that a future contractual cash flow is not a substantive obligation, it is necessary to demonstrate that the cash flow arises from (or after) a period for which one of the following cases apply:

a) The entity has the practical ability to reassess the risk of a particular policyholder and can set a price accordingly; or

b) Both of the following conditions are satisfied:

   i) The entity has the practical ability to reassess the risks at a portfolio level and can reset the price or level of benefits accordingly; and

   ii) The pricing of the premiums up to the date when the risks are reassessed does not take into account the risks that relate to future periods.

Further guidance on finding the appropriate contract boundary could be derived from the March 2018 IFRS Conceptual Framework. Paragraph 4.51 of the Conceptual Framework makes the link between the contract as the unit of account and the provision of useful and relevant information to stakeholders. Specifically,

- 4.51(a) of the Conceptual Framework makes references to the expiration pattern and interdependency of future cash flows. Also, the general expectation is that entities usually design contracts in a way that reflects their substance (see AP01 paper to May 2018 TRG).
- 4.52 of the Conceptual Framework points out the importance of considering if the benefits of a certain unit of account justify the costs of providing information at that level.

**1.11. What does it mean to not have the practical ability to reassess the risk?**

The reference to the "practical ability" to reassess the risk is intended to differentiate from a pure formal legal right to do so, but where practical facts and circumstances prevent the entity from doing so.

It is not the expectation that the entity does not intend to apply the reassessment but only the expectation that, even if it wishes to do so, it would not be able due to practical reasons.

Paragraph B64 notes that practicable ability exists if the entity can reprice the contract or portfolio (as applicable) to the same price it would charge for a new contract or portfolio with same characteristics. If an entity decides to charge a new price for new contracts, but for commercial reasons decides not to do so for existing contracts, then further judgment is required to assess whether this commercial decision was a free choice or refers to a practical inability to reprice. (see paper AP03 to May 2018 TRG.)

**1.12. What does it mean to reassess the risk of a particular policyholder?**

When considering whether or not there is a substantive obligation, the entity may consider if there is any risk of anti-selection by the policyholder on the specific insurance risk transfer. For instance, because of a possibly impaired risk profile, it might be advantageous for the policyholder to continue the existing contract rather than effect a new contract. This advantage would then indicate there is a substantive obligation of the entity to provide services.

The conditions outlined here might only be understood by considering the underlying risk for the "particular policyholder" and cannot be assessed based on collective information. Therefore, under paragraph 34 (a), this can be interpreted to refer to risks transferred from the policyholder, insurance and financial risk, only.

Paragraph 34 states that the reassessment should be able to *fully* reflect these risks, which in B64 is explained as all of the above risks.

**1.13. What does it mean to reassess the risks at a portfolio level?**

Reassessment is more than the ability to reflect changes in the general market view on risks; it requires the ability to reflect the perceived risks of the portfolio itself.

Again, the risks being reassessed are policyholder risks transferred from the policyholder, insurance and financial risks, and not lapse and expense risks created by the contract, even though they would be reflected in pricing (see paper AP02 to February 2018 TRG).

For reinsurance contracts, however, lapse risk and expense risk may be risks that are transferred from the insurer to the reinsurer (paragraph B15). Thus, for reinsurance, these risks are also subject to the reassessment of risk.

**1.14. When do premiums take into account risks that relate to future periods?**

The condition in paragraph 34(b) refers to substantive obligations arising from premiums already paid in the past even in the case of a collective premium or benefit adjustment

clause. If there are none, as outlined in paragraph 34(b)(ii), there is no substantive obligation. This is typically the case if the entity charges premiums only to finance services in the premium payment period, and the premium or benefit adjustment clause refers to future premiums financing the services in future periods entirely without support from already paid premiums. If the entity charged premiums in the past that included parts intentionally considered to finance coverage together with future premiums, those past premiums result in a substantive obligation of the entity, even if the future premiums are subject to a collective premium or benefit adjustment clause.

Paragraph 34(b) therefore reflects two of the common types of premiums:

a) Those that are often referred to as "yearly renewable" and only cover the risk arising in the next period, e.g., one year (no substantive obligation); and

b) Level premiums for the whole contract that in any one year might be greater or less than the cost of the risk for that year with any excess premium being used to help "finance" the cost of risk in a later period (substantive obligation).

**1.15. What is the consequence if a future cash outflow is outside the contract boundary, but not the originating premium?**

This situation occurs if the future benefits are to be provided in the form of another service, e.g., an investment contract with an option to purchase an annuity with proceeds at maturity (see paragraph B24).

The answer is that in that case, the measurement at the execution date of the option (i.e., the date of the contract boundary) assumes that the available value for transfer subject to the pricing decision is assumed to be paid in cash.

**1.16. What are the points of attention for contract boundaries under reinsurance?**

Paragraph 34 cannot be applied as it is, because in reinsurance held, it is the entity who pays the premium (substantive obligation) and receives services (substantive right). In accordance with paragraph 4 (see TRG paper 3 of February 2018 and TRG paper 4 of May 2018), the reading of this paragraph needs to be adapted appropriately to the context of reinsurance held. The contract boundary is then, the later of:

- When the reinsurer can reassess the services, thereby ending the substantive right of the holder of the reinsurance to receive the service; and
- The insurer is no longer compelled to pay a premium, thereby ending the substantive obligation.

When a direct insurance contract is reinsured, differences in the boundaries of both contracts may occur due to reinsurance and underlying insurance contracts having different dates of initial recognition. For example:

- A new reinsurance contract may cover insurance contracts that existed prior to the reinsurance contract coming into effect; or

- The scope of the reinsurance contract may extend to include future insurance contracts yet to be issued within the boundary of the reinsurance contract.

The February 2018 TRG meeting, in its discussion of paper AP03, observed that expected future contracts could be within the boundary of the reinsurance contracts. Note paragraph 62A only requires that a proportionate reinsurance should not be recognised earlier than the initial recognition of any underlying contract and does not determine the boundary of the reinsurance contract.

Also, reinsurance contracts sometimes provide the reinsurer with cancellation options that are more flexible than in direct insurance, and thus care is needed in assessing the boundary of a reinsurance contract held because it can be different from the boundaries of the underlying reinsured contracts.

**1.17. What are other boundary situations that need separate consideration?**

Paragraph 35 states that expected future cash flows that are not within the contract boundary relate to future contracts. IFRS 17 does not make a distinction between the situation where such cash flows are highly interrelated with the existing contract or not.

A typical situation is an insurance contract with a unit linked account and an insurance rider with the annual stepped rider premiums deducted from the unit linked account. As the units are repriced daily to market, they do not create a substantive obligation. If the rider premiums can be repriced at the portfolio level at annual renewal, then substantive obligation for insurance ends at annual renewal, and boundary for the contract, as a whole, is the annual renewal date (see AP02 February 2018 TRG). The cash flows arising from these future premiums are then considered as being outside the contract boundary.

### Future insurance contracts

Under paragraph 35, future premiums and the cash flows arising from them that are outside the contract boundary would relate to future contracts. Since contracts can be combined in groups issued no more than one year apart, each set of annual premiums and associated cash flows would be treated as a separate contract under IFRS 17.

This has significant implications if the cash flows resulting from paid and future premiums are highly interrelated, as discussed in the next paragraph.

Acquisition expenses for the contract as a whole: acquisition expenses are allocated to the initial contract created by premiums paid up to annual renewal, except to the extent they are dependent on renewal of the contract (e.g., acquisition commission subject to clawback if the contract is not renewed can be allocated to the future contract created by the renewal (see AP04 February 2018 TRG)). This may lead to an onerous “first” contract comprising the first premium only and to several very profitable contracts related to future premiums afterwards.

In some instances, a rider cost may be funded from an investment component built by paid premiums. The risk premiums extracted from each “premium layer” contract would be reconsidered every time a new premium is paid.

Also, it may be technically possible that such "new" contracts are not in the scope of IFRS 17, e.g., right to insurance cover is not available in later years of the contract. As discussed in questions 1.10, 1.12, and 1.15 of this chapter, the current contract and such future new contracts would, in principle, have unrelated cash flow patterns that are not interdependent.

Paragraph 25 requires that a "new" contract (e.g., a future premium that is now outside the contract boundary) is recognised at the earliest of:

(i) The beginning of coverage period;

(ii) The date of the first payment; and

(iii) The moment that the contract becomes onerous.

So, for a non-onerous contract, a new right or obligation could occur before the first related payment, and when treated as a new contract, the rights or obligation should then already be considered before the payment date.

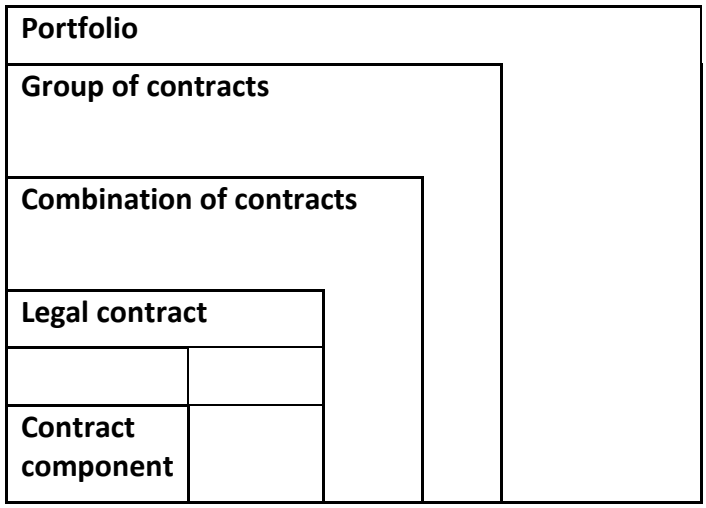
**1.18. When should a contract boundary be reassessed?**

Paragraph 64 states that the boundary of a contract should be reassessed at the end of each reporting period in order to include the effect of changes in the substantive rights and obligations of the entity.

It might be argued, in the example of future premiums being outside the current boundary of a contract, that any new premium paid could be seen as "crossing" the existing boundary and extending the new boundary by including the newly received premium and all related cash flows[7].

## Aggregated levels of insurance contracts

IFRS 17 defines different levels at which insurance contracts can or should be aggregated.




In this section, the levels above contract level are discussed.

[7] This was discussed during the September 2018 TRG.

**1.19. When should contracts be combined for measurement purposes?**

Paragraph 9 states that contracts may need to be combined and treated as a whole in order to report their substance, if they have the same or related counterparty and as a set achieve, or are designed to achieve, an overall commercial effect. Paragraph 9 gives the example of two contracts that negate each other. This was discussed at the May 18 TRG (see paper AP01), and the TRG observed that:

- A single legal contract would generally be considered on its own to be single contract in substance, but there may be circumstances when a set of contracts are in substance one contract.
- Determination requires careful judgment and consideration of all the relevant facts and circumstances, and no single factor is determinative in making this assessment.
- Considerations that might be relevant include:
  - Rights and obligations are different when looked at together compared to individually. For example, rights and obligations in one contract may negate those in another.
  - One contract cannot be measured without considering the other, e.g., the contracts are highly interrelated.
- An existence of a discount, of itself, does not mean that a set of contracts are designed to achieve an overall commercial effect.

If the assessment leads to the conclusion that paragraph 9 applies, then the contracts as a whole need to be combined.

This is not to be confused with a legal contract that has multiple insurance components. Such contract must be considered as a whole, even if the insurance components can be measured separately. Paragraphs 10-13 do not require that such a contract should be split in different sub-contracts.

**1.20. What is the meaning of "portfolio of insurance contracts" in IFRS 17?**

A portfolio comprises contracts subject to similar risks and managed together. Paragraph 14 also notes that contracts within a "product line" would be expected to have similar risks and hence be in the same portfolio if they are managed together.

Also, insurance contracts and investment contracts with discretionary participation features can be in the same portfolio when they are managed together. This would be the case when some contracts, but not all, have active insurance covers. This situation is why contracts with discretionary participation features are in scope of IFRS 17, but only for entities that also issue insurance contracts (paragraph BC83).

**1.21. What does it mean that "contracts have similar risks"?**

In general, IFRS 17 and its Basis for Conclusions contain several sections related to this question. Paragraph 14 states:

> A portfolio comprises contracts subject to similar risks and managed together. Contracts within a product line would be expected to have similar risks and hence would be expected to be in the same portfolio if they are managed together. Contracts in different product lines (for example single premium fixed annuities compared with regular term life assurance) would not be expected to have similar risks and hence would be expected to be in different portfolios.

"Similar" does not mean "identical". Some variation in risk is reasonable, as long as the contracts are sufficiently similar. Since insurance is diverse and all portfolios are different, no prescriptive guidance can be provided on the correct level of materiality for the definition "of similar" and thus the decision process is likely to be entity specific.

Note that IFRS 17 discusses similar risks, which does not necessarily have the same interpretation as "similar insurance risks". Therefore, an entity may consider other risks such as lapse, expense, and financial risk in its determination of what similar risks means.

**1.22. What does "managed together" mean?**

Again, there is no clear definition in IFRS 17 for this term. Hence, judgment is required on what constitutes "managed together".

From a practical perspective, the considerations relating to subject to similar risks noted above may require a level of granularity in assignment of portfolios that, in many cases, could result in portfolios that are naturally managed together.

It is possible that the determination of the portfolio level will vary between entities due to different sizes and complexity as well as the different ways in which business is managed. A practical approach to determining the portfolios for an entity might rely on the internal management reporting systems. For example, an entity's internal management systems may consolidate results into product lines. These product lines could provide a suitable aggregation of similar risks; furthermore, an entity may have its systems aligned with its internal management structure and may disclose to the market on that basis. This might be sufficient but not necessary to assume that the business is "managed together".

Other factors to consider against the test of managed together could include:

- Distribution channel(s) that the contracts are sold through;
- The level at which regulation takes place (e.g., compulsory third-party insurance in Australia);
- Capital allocation basis;
- The operating model or management structure of the entity, including how management incentives are structured;
- The way contracts are reported together in performance reports; and
- The way in which investments and asset liability risks are managed.

Product line groupings as prescribed by prudential regulators may not necessarily be appropriate to define portfolios due to a different focus in IFRS 17. The latter's primary

focus is about reporting appropriate profits and losses (paragraph BC119) rather than the solvency focus of prudential regulators.

Note that an entity may change how it manages its business over time. As a result, the number and/or the composition of portfolios may change over time; although it does not necessarily affect the number of groups, as historical groups do not change and are sub-sets of the portfolios.

**1.23. What are the potential impacts of an entity's choice of portfolio?**

The definition of portfolio has an impact on:

- Further grouping of contracts, which can only be done within a portfolio;
- The level at which entities can make an accounting policy choice to reflect all insurance finance income or expenses in profit or loss or disaggregate it between profit or loss and other comprehensive income. This comes from the fact that IFRS 17 assumes that each portfolio has its own portfolio of assets backing the insurance contracts (see paragraphs BC42–BC44).
- The level at which an entity would consider its ability to reassess risks in order to define contract boundaries (see paragraph 34(b)(i)).
- Expenses included in measurement, as expenses need to be directly attributable at portfolio level (see paragraphs B65(e) and B66(d)).

It is important to remember, however, that the significance of insurance risk is considered at the portfolio level but still in relation to individual contracts (see paragraphs B22 and BC79).

### Groups of contracts

**1.24. What are the requirements for contracts in the same portfolio to be grouped together in a group of insurance contracts?**

Please see Chapter 5 – Level of Aggregation.

**1.25. What if cash flows are measured at a higher level than the group of contracts or portfolio?**

Please see Chapter 2 – Estimates of Future Cash Flows.

## Section A – Introduction to the General Measurement Approach

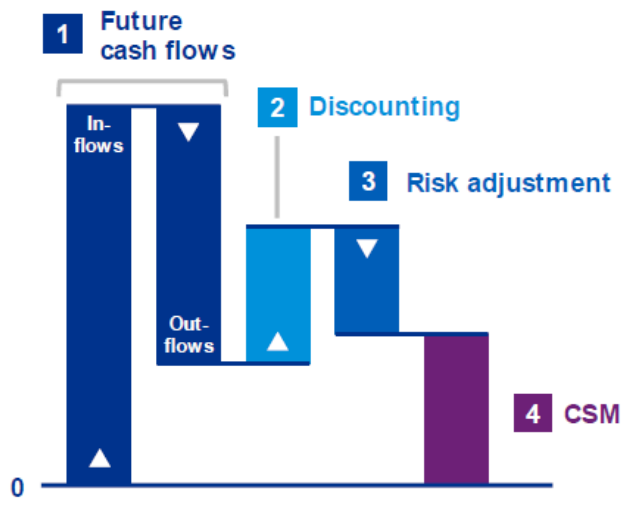
This section includes five chapters that cover the technical aspects of the general measurement approach (GMA).

These areas are:

- Estimates of future cash flows (Chapter 2);
- Discount rates (Chapter 3);
- Risk adjustment (Chapter 4);
- Contractual service margin and loss component (Chapter 6).

There is an additional explanatory section on levels of aggregation of contracts for the use of the GMA (Chapter 5).

When considered together these are often referred to as the "building block approach" as shown below:




Note: thanks to KPMG for this representation

**1 Unbiased estimate of future cash flows**

The estimates of cash flows used to determine the cash inflows and outflows relevant to the fulfilment of the insurance contract. These estimates should be explicit, unbiased and probability-weighted

**2 Discounted to balance date**

At a rate not dependent on the assets supporting the liabilities items (based on either the "bottom up" or "top down" approach) for most contracts, the discount rate reflects the characteristics of the insurance liability and is consistent with relevant observable market inputs for each reporting period.

**3 Add risk adjustment**

An adjustment to reflect uncertainty in future cash flows relating to non-financial risk.

**4 Allow for profit/loss effect**

CSM eliminates the recognition of any future accounting profit at inception. Other than for reinsurance contracts held, CSM cannot be negative (i.e., the present value of any onerous contract must be charged immediately to losses). CSM is spread over the remaining coverage period.

### What are the building blocks that make up the general measurement approach?

Paragraphs 29-52 provide guidance on this topic. BC 18-26 and BC 36-119 also provide background on the GMA.

The IAA has published a paper on Current Estimates (Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins[8]) – see, in particular, chapter 2, and monographs on Discount Rates[9] (see chapter 3) and on Stochastic Modeling[10] that may be useful for this

[8] Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins
[9] Discount Rates in Financial Reporting (actuaries.org)
[10] Stochastic Modelling – Theory and Reality from an Actuarial Perspective (actuaries.org)

purpose. More recently, a monograph on Risk Adjustment[11] was released in May 2018 (see chapter 4). In general, we do not repeat material from any of the monographs in this IAN. In addition, the general educational material of IAA members provides significant educational material on the different ways to estimate future cash flows. All of this educational material may be relevant.

The following paragraphs provide educational material on the use of the various "building blocks" that make up the GMA in measuring a group of insurance contracts on initial recognition, and subsequent measurement. There then follow five chapters providing more in-depth educational material on individual aspects of the measurement model in greater detail.

Given the principle-based nature of IFRS 17, there is potential for differing interpretations of the various building blocks. Consequently, it is possible that comparison between reporting entities may reveal inconsistencies. Further, definition of the various building blocks may include either "overlapping" (or double-counting) of various aspects of the building blocks, or "gaps" (or omissions of certain elements). The scope of the actuary's assignment may include responsibility to ensure that the building blocks are appropriately constructed, and that no such overlaps or gaps occur. Some examples of potential situations for differing interpretations follow:

a) In defining the ***"estimates of future cash flows"***, IFRS 17 refers to "the expected value (i.e., the probability-weighted mean) of the full range of possible outcomes" (paragraph 33). However, in the Basis for Conclusions for IFRS 17, the reporting entity is led towards use of "all reasonable and supportable information available without undue cost or effort about the future cash flows" (BC 18).

   In practice, therefore, judgment will be needed, particularly in the incorporation of the extremes of the potential distribution of outcomes. For instance, estimates of certain extreme outcomes may not be supportable, and may need to be included by way of a subjective adjustment. Even if it is judged that such an adjustment would not be material to the expected value of the future cash flows, the impact on the risk adjustment may still be material.

b) In defining an adjustment for the ***"time value of money"***, IFRS 17 incorporates the need to allow for "the financial risks associated with the future cash flows" (paragraph BC 19), hence arriving at a risk-adjusted rate of discount. However, it also recognises that certain insurance contracts may combine financial and non-financial risks in such a way that "those components are interrelated" (BC 18). Hence, there is potential for the adjustment for the time value of money to exclude financial risk adjustment.

   Judgment is needed in setting the barriers between the risks to be included in the discount rate.

[11] Risk Adjustments for Insurance Contracts under IFRS 17 (actuaries.org)

c) In defining the ***"risk adjustment for non-financial risk"***, IFRS 17 does not separately define non-financial risk and effectively defines it by reference to "***financial risk***", the definition of which leaves room for judgment (see Chapter 4 for background).

Again, this also leaves room for judgment in setting the barrier between financial and non-financial risk.

d) The illiquidity risk may be included in the discount rate, or alternatively it can be allowed for as part of the risk adjustment (see Chapter 3 for background).

The risk culture of the entity may inform the constitution of the building blocks, including:

- The perceived boundary between reasonable and unreasonable (i.e., spurious) cash flow projection in relation to the insurance contracts;
- The pricing bases for insurance products;
- Treatment of any asset and liability mismatch allowance/reserve, since this can be represented in different ways; and
- The cash flows and risks within the boundary of the contract under IFRS 17 and those used for other purposes.

It should also be noted that actuarial input is far from limited to the balance sheet perspective with regards to IFRS 17. As is referenced in Section E – Presentation and Disclosure.

## Chapter 2 – Estimates of Future Cash Flows

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

### 2.A. What does this chapter address?

This chapter provides information concerning the estimates of future cash flows for use in measurement of liabilities and assets arising under contracts within the scope of IFRS 17. This applies both at issue of the contract and at subsequent measurements. Cash flows in this chapter are undiscounted unless otherwise stated.

### 2.B. Which sections of IFRS 17 address this topic?

Paragraphs 33–35 and B36–B71 provide guidance on this topic.

Paragraphs BC 146–BC184 also provide background on the subject.

### 2.C. What other IAA documents are relevant to this topic?

The IAA has published monographs on current estimates (Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins) and on stochastic methods (Stochastic Modelling) that could be useful for this purpose. In general, material from these monographs is not repeated in this chapter.

In addition, the general educational material of IAA members provides significant educational material on how to estimate future cash flows. Such educational material could be relevant.

#### General Issues:

### 2.1. What are the requirements of IFRS 17 regarding the measurement of estimates of future cash flows?

Paragraph 33 includes the key characteristics of the measurement of estimates of future cash flows, namely they:

i. Include all future cash flows within the contract boundary, including those that may have been previously accounted for separately from the insurance contract liability (e.g., overdue premiums);

ii. Are estimates of the probability weighted mean of the full range of possible outcomes;

iii. Are unbiased (i.e., they do not include the risk adjustment for non-financial risk);

iv. Reflect the perspective of the entity rather than a market perspective (except that estimates of market variables are consistent with observable market values for those variables);

v. Are current; and

vi. Are explicit.

In estimating future cash flows, it may be necessary to reflect the specifics of the entity for which the cash flows are being estimated. For example, different entities may have different underwriting or claim settlement practices that might affect the estimated future cash flows. While past experience may reflect the practices in effect at the time, if the entity has made changes to those practices, assumptions based on past experience may need to be adjusted for the changes.

### 2.2. What are the common types of cash flows to be included?

Cash flows referred to in IFRS 17 are primarily payments of cash exchanged between the parties under an insurance contract in accordance with the terms and conditions of the contract. The term "cash flow" may also be used as shorthand for other transfers of economic resources (i.e., cash flow equivalents) that are not settled in cash between the parties to the insurance contract (e.g., paying a third party to repair an automobile). Cash flows may also include such items as administration costs, certain overheads (per paragraph B65), payments to third parties, and non-cash transactions (e.g., the provision of insurance-related goods and services).

Future cash flows may refer to any component of the insurance contract that is covered by IFRS 17 excluding separated components. Cash flows include components that might sometimes be seen as separate but are not separate under IFRS 17 (e.g., policy riders or policy loans). See Chapter – 1 Classification of Contracts for additional discussion of this topic.

Paragraph B65 states:

"*Cash flows within the boundary of an insurance contract are those that relate directly to the fulfilment of the contract, including cash flows for which the entity has discretion over the amount or timing.*"

These cash flows include, but are not limited to:

- Premiums, including overdue premiums;
- Payments to (or on behalf of) policyholders including
  - Claims that have been reported but not yet paid;
  - Incurred claims that have not yet been reported;
  - Payments that depend on returns of underlying items (see Chapter 8 – Contracts with Participation Features and Other Variable Cash Flows);
  - Payments to third parties in fulfilling obligations to (or on behalf of) the policyholder (e.g., in third-party liability insurance or participating benefits where the contract grants the entity discretion to whom surplus is distributed);
  - Payments from embedded derivatives if not separated;
- Payments on future claims on unexpired risks;

- An allocation of insurance acquisition cash flows;
- Claim handling costs;
- Costs the entity will incur for payments in kind;
- Policy administration and maintenance costs;
- Transaction-based costs such as premium taxes and levies;
- Income taxes either paid in a fiduciary capacity to meet obligations of the policyholder or specifically chargeable to the policyholder;
- Cash inflows from salvage, subrogation, and other recoveries;
- Retrospective premium adjustments based on claim experience within the contract boundary (e.g., some workers compensation and reinsurance contracts);
- An allocation of fixed and variable overheads directly attributable to fulfilling insurance contracts; and
- Any other costs specifically chargeable to the policyholder under the terms of the contract (e.g., fees contractually agreed for printing a new policy document after loss of the original one).

### 2.3. At what level are cash flows determined?

Cash flows can usually be identified at the individual contract level. For measurement purposes, however, contracts are aggregated into portfolios of insurance contracts ("portfolios") and groups of insurance contracts ("groups") (see Chapter 5 – Level of Aggregation). IFRS 17 allows the entity to estimate the cash flows at whatever level of aggregation is most practical. If the entity makes estimates at a higher level, it needs to be able to allocate or apportion those estimates to groups so that the appropriate amounts are included in the measurement of the groups' fulfilment cash flows for remaining coverage and incurred claims.

Assumptions may be derived at aggregation levels that are different from the aggregation level applied for measuring contracts. In such situations, judgement is needed to determine what adjustment(s), if any, to apply to determine cash flows at the required aggregation level. For example, maintenance expenses may be determined for all life insurance contracts combined, but separate assumptions may be needed for term insurance and whole life contracts.

In some situations, particularly for contracts covering multiple risks and/or perils, it may be helpful to analyse the experience separately for each of the multiple coverages. Such separation, for analysis and projection purposes, is particularly appropriate where the balance of coverages varies from contract to contract within a line of business (e.g., small business package policies). Such coverage cash flows may then be combined at the contract level if practical and useful, before contract cash flows are aggregated into groups for measurement purposes. Similar concerns will also apply to life insurance

contracts with multiple risks (e.g., mortality and disability) or groups with multiple durations (e.g., 10, 20, and 30-year term in the same group).

In summary, paragraph BC117 states: "*IFRS 17 allows an entity to estimate the fulfilment cash flows at whatever level of aggregation is most appropriate from a practical perspective. All that is necessary is that the entity is able to allocate such estimates to groups of insurance contracts so that the resulting fulfilment cash flows of the group comply with requirements of IFRS 17*." Paragraph 24 gives effect to this.

## Issues concerning the definition of cash flows to be included

### 2.4. What is a current estimate?

A current estimate at the reporting date is the entity's estimate based on currently available information in a manner consistent with relevant accounting guidance. The term "current estimate" is used in this chapter as a short form for the "current unbiased estimate of the future cash flows".

IFRS 17 defines the term "fulfilment cash flows" as including the risk adjustment for non-financial risk (herein shortened to "risk adjustment") and the effect of discounting. This chapter, however, does not refer to issues regarding calculating present values nor the risk adjustment but focuses on the identification of cash flows and estimating unbiased expected values of those cash flows.

### 2.5. What is the meaning of expected value?

For IFRS purposes, "expected value of cash flows" represents the mean of the (typically unknown) probability distribution of cash flows. In line with this mathematical concept, IFRS 17 requires that conceptually all scenarios are covered in estimating the expected value of future cash flows, including scenarios in the extreme tails of the distribution. Where the variability in future cash flows follows a symmetric distribution, it may be appropriate to conclude that the impact and likelihood of favourable and unfavourable extreme scenarios not explicitly considered may broadly offset each other; however, where the distribution of future cash flows is skewed, it may be necessary to adjust the expected value to reflect extreme scenarios not considered explicitly.

For example, the probability distributions of property claims tend to be positively skewed. The available data for similar products may not be sufficient to fully reflect the future impact of abnormally large claims. In these situations, it is often necessary to rely on other sources of data and judgement to adjust the estimates. This tends to increase the expected value to reflect these high-cost but low frequency events. Similarly, it may be appropriate to take into account favourable extreme scenarios, such as, for life insurance, a fall in mortality rates if an affordable cure for cancer is developed. All such adjustments would require judgement on the likely impact and probability of occurrence to adjust the expected value.

The reference in IFRS 17 to scenarios is about the defining characteristic of the mean value of a distribution function rather than providing guidance regarding how to estimate the expected value. IFRS 17 does not require that all possible (or even any) scenarios be

explicitly constructed nor is it expected that entities will develop stochastic models for all IFRS 17 reporting.

**2.6. Does the distribution function of cash flows need to be determined?**

The distribution function of cash flows does not necessarily need to be determined. The accounting purpose is to derive a current unbiased estimate of the expected value of cash flows. There are a variety of approaches that can be used for this purpose, and IFRS 17 does not provide any guidance regarding how the estimate is to be made. Any statistical or non-statistical approach applied in determining figures for an IFRS report needs to comply with general accounting requirements as outlined elsewhere in this chapter.

**2.7. What does "unbiased" mean?**

According to paragraphs BC 148 and BC 149, unbiased estimates:

a) Capture information about the full range of possible outcomes,

b) Should not have an intention of attaining a particular outcome, and

c) Should not have an intention of influencing a particular behaviour.

Therefore, an unbiased estimate does not include either conservatism or optimism.

**2.8. How does the objective for current estimates under IFRS 17 differ from objectives for other purposes?**

IFRS 17 calls for an estimate of the statistical mean rather than the statistical median or mode. Other descriptions, such as best estimate or best estimate plus a margin, used in other accounting structures, may differ from the IFRS 17 objective. Before using cash flows developed for other purposes, their fitness for reporting under IFRS 17 would need to be assessed.

**2.9. How are cash flows that do not directly belong to the contract, but are contractual, distinguished from cash flows belonging to the entity in general?**

Paragraph B65 sets out the cash flows included in the measurement of insurance contracts and paragraph B66 sets out those that are excluded. Broadly, cash flows are included if they are specifically generated because the contract is in existence (e.g., benefits, commissions, and direct administrative expense) and needed in fulfilling the contract. Indirect administrative expenses, including general overhead, are included only to the extent that they are directly attributable to fulfilling a portfolio as per paragraph B65(l). If such expenses are not directly attributable, they are general expenses of the entity not belonging to the contract and are thus not considered in estimates of future cash flows of the contracts.

Paragraph B66 excludes cash flows that are covered elsewhere such as investment returns, reinsurance, separated components valued under other standards, cash flows beyond the boundary of the contract or not directly attributable, and taxes not included under B65(i), wastage and internal transfers that do not affect policyholder benefits.

Investment administration costs are excluded except if they are costs for (B65(ka)):

- Investment activities that enhance benefits from insurance coverage;
- Providing investment-return service under non-participating contracts;
- Providing investment-related service under participating contracts.

Also, any other costs explicitly charged under the terms of the contract (b65(m)).

Whether a particular outflow (or inflow) is included will likely depend on the specifics of a situation and the terms of the insurance contract.

**2.10. To what extent do the estimates of future cash flows have to differentiate contracts with different characteristics (e.g., age and gender), and other known differences of contracts?**

Statistical estimates are usually only differentiated for a limited number of characteristics of the item to be estimated and include the average effect of other characteristics. IFRS 17 does not require the entity to assess all characteristics of a contract that might be relevant to the outcome and establish estimates on that basis. Paragraph B37 does require consideration of "all reasonable and supportable information available at the reporting date without undue cost or effort".

Accordingly, it is a matter of judgment as to what degree characteristics of individual contracts are considered in estimating future cash flows. It may be appropriate for individual contracts to be aggregated into groups that are not further distinguished. Paragraph B37 does note, however, that "information available from an entity's own information systems is considered to be available without undue cost or effort".

For the purposes of initial grouping, an entity may identify the fulfilment cash flows of an individual contract. Accordingly, assumptions that are appropriate for that purpose would need to be chosen for each contract. It is necessary to determine the degree to which the assumptions are differentiated for the characteristics of individual contracts. The individual characteristics of each contract are only considered to the extent that the impact is relevant to the purpose of the initial grouping.

It may be desirable to consider, in an internal experience analysis, a wide range of factors which might be used for determining liability for remaining coverage and liability for incurred claims, in order to determine whether it is appropriate to incorporate such factors explicitly into the analysis and whether it is appropriate to then incorporate them into the measurement. Factors need not be incorporated in the analysis unless there is reason to expect that they can reasonably be collected and used by the entity without undue cost and that they are likely to materially impact the measurement of the fulfilment cash flows of the groups.

Many characteristics of contracts will not be available to the entity in any case. For other characteristics, even if known, the entity might not be able to assess their impact due to limited statistical data or the undue cost or effort to obtain them. Other characteristics of contracts will not be consistently available for all contracts and, as a consequence, may be averaged over other contracts. Other characteristics, which might be assessable at outset or even are assessed, might be ignored in pricing, because the overall benefits from such

a differentiation would not outweigh the cost of doing so. For example, certain medical examinations or adjusting information systems to differentiate a certain characteristic could be more expensive than the price effect. An entity might thus limit the differentiation of contract characteristics to a certain number that can be administratively and statistically managed in a reasonable way.

Accordingly, for estimating the liability for remaining coverage, the differentiation of assumptions as applied to individual contracts might start with the differentiation used for pricing. Less differentiation than applied in pricing might, if applied to individual contracts, result in inconsistencies between premiums and the measurement of the related cash outflows if the cash flows are based on averaged assumptions while the associated premiums are more differentiated. For example, a contract viewed in pricing as being riskier and accordingly having a higher premium when compared with an average risk might show a high contractual service margin (CSM) unless offset by a higher risk adjustment, while a contract seen in pricing as less risky and accordingly having a lower premium in comparison with the average risk might result in a low CSM or even show a contract as onerous. For this reason, particularly in non-life insurance, the premiums charged are sometimes used as a proxy for other differences between contracts.

There are exceptions to this principle. Paragraph BC135(a) refers to an “intentional pricing strategy”. If an entity intentionally under-prices certain contracts, for example, to gain market share by ignoring relevant and known characteristics of the contracts, it, in effect, charges insufficient premiums for those contracts, even if the premiums for the portfolio as a whole are sufficient. Unless the entity is required by law to ignore these characteristics, IFRS 17 requires the entity to allow for them in measurement and, if it so turns out, recognise a group of onerous contracts.

Paragraph 20 allows an exception for grouping where law or regulation constrains the use of specific characteristics for pricing (e.g., where pricing of annuities must be on a unisex or gender-neutral basis). In such cases, the entity may include such contracts in the same group, but only if they would otherwise fall into a different group due solely to the regulatory pricing constraints. Note that this does not allow those specific characteristics to be ignored in the measurement process, only for grouping.

It is acceptable to allow for the average impact of considered characteristics for the contracts in a group so that only the average impact of the characteristics is reflected in the measurement, provided that it reflects the true mix of such characteristics in the group. If the composition of a group changes, however, it may be necessary to reassess the average impact so that it continues to reflect the mix of characteristics in the group.

## Inflows

### 2.11. What are the cash inflows to be considered?

All cash inflows arising under rights of the insurance contracts and directly related to services provided within the contract boundary are considered. The primary inflow is, of course, premium. Investment income, other than that related to policy loans (see question 2.12), is not included, because it is a cash inflow due to investments and not specifically related to the fulfilment of the contracts.

Other cash inflows considered include such items as salvage, subrogation, contract charges such as cost of insurance charges, and claw-backs of agent commissions originally paid related to the contract. The treatment of such recoveries is not specified in IFRS 17. Also not specified is the treatment of retrospective premium adjustments based on claim experience. Any discrepancies between actuarial estimates of these recoveries and their accounting treatment (as, possibly inflows or negative outflows) could give rise to double counting or omission. Cash inflows on insurance riders and future insurance options, such as disability premium waiver, hospitalisation, term insurance, guaranteed future insurance (including cash flows from the expected exercise of such guarantees) will also be included, if they are related to services provided within the contract boundary. See Chapter 1 for more on contract boundaries.

Waiver of premium benefits are usually treated as a cash outflow equivalent (i.e., claim benefit) provided to the policyholder. They are treated accordingly when determining the liability for remaining coverage and liability for incurred claims (when premium is being waived).

Cash flows relating to reinsurance held premiums and related expenses (outflows from the entity's perspective) and claims recoveries and commissions (inflows from the insurer's perspective) are also estimated but are included in the future cash flows of the reinsurance contract held rather than the underlying insurance contract (see Chapter 9 – Reinsurance).

### 2.12. How are policy loans and repayments handled?

If policy loans are a component of the insurance contract (i.e., they are legally part of the insurance contract), loans and repayments of policy loans are part of fulfilment cash flows, although the payment itself does not represent an insurance contract service. If future policy loans are expected within the contract boundary, expected future loans and repayments as well as interest accrued on outstanding loans are also a part of the fulfilment cash flows.

### 2.13. How are premiums prepaid with interest accretion treated?

Prepaid premiums are treated the same as premiums paid at their due date. They are part of the cash inflows, and the frequency and effect of their occurrence is included as part of future cash flows. In some cases, there is an agreement that the entity grants a rebate on prepaid premiums in the form of interest accreted. If this agreement is a component of the insurance contract and not separated as a distinct investment component, the rebate

is considered in measurement and treated as an adjustment to premium as per paragraph B65(a).

IFRS 17 does not directly address the issue of recognition of prepaid premiums but does require that liabilities reflect paid premiums not premiums due. In the same way that insurance acquisition cash flows arising before recognising the group are an asset according to paragraph 27, liabilities arising from prepaid premiums might, but not necessarily, be recognised as a liability (that would be reported with insurance contract liabilities) until initial recognition of the related insurance contract.

**2.14. How are extra premiums paid for substandard risks included?**

Extra premiums for substandard risks are treated identically to other premiums. Moreover, to be consistent with the extra premiums, it is important that expectations for the related future benefits are estimated on the basis of the correspondingly higher risk. Actuaries might also consider whether the statistical knowledge available about the higher risk provides an adequate basis from which to develop an appropriate estimate that deviates from the extra premium determined. See paragraph 2.10 for further discussion of the treatment of different underlying assumptions. Similar considerations apply for premium rebates for risks better than standard.

### Outflows

**2.15. What are examples of outflows included in future cash flows?**

Benefit or claim payments, directly related expenses, and similar items are the important items included in cash outflows. As noted previously in question 2.11, the treatment of salvage, subrogation, and retrospective premium adjustments based on claim experience is not specified in IFRS 17. Any discrepancies between actuarial estimates of such recoveries and their accounting treatment (as, possibly outflows or negative inflows) could give rise to double counting or omission of these cash flows.

**2.16. What kind of data is used to estimate future cash outflows?**

Paragraph B41 requires assumptions to be based on information including, importantly, the entity's own experience to the extent it is available, supportable, and credible. The results arising from an entity's data may need to be adjusted if there is reason to believe that historical patterns and/or relationships will not continue in the future or if other influences may affect them. If internal data are not available, either in whole or in part, then industry or other available data, e.g., population data, may need to be used as a basis for assumptions. In general, an entity's experience will be analysed for this purpose using an internal experience study.

Paragraphs 33(a) and B37 set limits on the effort required to collect the statistical basis of determining the assumptions. In general, information used should be reasonable, supportable, and obtainable without undue cost or effort. Information available from the entity's own information system, e.g., internal experience studies, and other sources used for pricing are considered available without undue cost or effort.

**2.17. How are available inputs from financial markets and from other external sources applied to cash flow estimates?**

If, for example, a contract has new elements on which the entity has no or limited experience, external inputs, such as industry experience, might be used after validation for reasonableness. Available inputs from financial markets and from other external sources might not, however, represent characteristics of the cash flows of a certain contract; if that is the case, the entity's estimate or an adjustment to financial market information may be needed. As the entity obtains sufficiently robust experience of its own, it may consider supplementing the external data or eventually substituting its own experience.

**2.18. What methods are appropriate to estimate future cash flows that might be dependent on market variables?**

Stochastic projections (see IAA monograph *Stochastic Modelling*) are allowed but are not necessarily required. They are, though, more likely to be needed for skewed risks than for risks with symmetrical distributions. Stochastic methods will more likely be used to develop estimates of a risk adjustment (see IAA Monograph *Risk Adjustments for Insurance Contracts under IFRS 17*) or interest-rate-dependent cash flows than the usual mean estimate of common benefits. IFRS 17 refers to, but does not require, using stochastic modelling for cash flows that are asset-return sensitive (paragraph B48) and also if cash flows reflect a series of interrelated options (see paragraph B39 and paragraph B28 of IFRS 13 about the extent of such modelling needed).

**2.19. What needs to be considered in estimating policyholder behaviour (e.g., surrender rights and options to convert to other types of contracts if such an option exists in a contract, such as between a term and whole life contract)?**

The basis for the expected value is the entity's estimate of future expected behaviour (based on experience and judgement), not necessarily financially rational behaviour (see paragraph B62). Experience might cover only a very limited range of circumstances as incurred up to the present. Accordingly, for a wide variety of possible future circumstances, no past experience may be available. In filling that gap, it may be appropriate to consider whether the chosen assumptions have a significant effect on the outcome compared with the outcome resulting from assuming that the behaviour would be in line with past experience even in changed circumstances. If the difference is relevant, it may be appropriate to consider if and how the experience needs to be adjusted to reflect expected future conditions (paragraph B41(c)). The risk of departure from such assumptions is to be considered in the risk adjustment to the extent it is non-financial risk. The expected value considers both advantageous and disadvantageous behaviour of policyholders.

One of the considerations when setting assumptions is the possible effects of policyholder anti-selection. In certain circumstances, policyholder behaviour will depend on financial circumstances; in such situations, it may be important that the policyholder behaviour

assumptions be consistent with the financial assumptions being used. This applies whether or not a stochastic approach is used.

### Internal Costs

**2.20. What methods are appropriate to estimate expected future internally incurred costs?**

Estimates of future management costs will usually make use of any forecasts the entity makes including budgets and business plans. Those estimates of future costs will usually anticipate inflation. It may also be appropriate to allow for expected future economies (or diseconomies) of scale, consistent with the likelihood of these scenarios and unbiased mean.

Future costs will also consider whether the entity is being measured as a going concern. If so, costs may need to reflect a reasonable development of future new business, if appropriate, in deriving an unbiased estimate of the mean, representing any expected economies of scale.

**2.21. How are contract administration costs that are paid or expected to be paid prior or subsequent to the contractual due date handled?**

The proper measurement is based on the expected actual payment date, not the due date, and allows for any consequences of early or late payment e.g., pre-paid or annualised commissions, interest accreted, and penalties charged. If it can be shown, however, that there is no material difference between the actual and due dates, the measurement could be based on due dates. Caution needs to be taken to ensure consistency with the accounting treatment to avoid double counting or omission.

**2.22. Which cash flows other than claims payments and contractual services may be considered?**

The key guidance for differentiating cash flows other than claims payments and other contractual services is the exclusion of general overhead costs in paragraph B66(d) if they "*cannot be directly attributed to the portfolio of insurance contracts that contain the contract*". On the other hand, paragraph B65(l) includes examples of some overhead expenses that are included in estimated future cash flows. Those general overhead costs that are not included in the estimate of future cash flows are accordingly subject to authoritative guidance in other IFRSs determining their recognition, measurement, presentation, and disclosures. This IAN does not discuss such items.

The reference to "*directly attributable*" is a generally used phrase in IFRSs, and the entity might have previously adopted interpretations of this term in its accounting policies. This IAN does not discuss the accounting meaning of this phrase. The accounting interpretation of this phrase might, however, result in the need to choose the partition of the business into portfolios suitably to allow an adequate split of currently incurred and future expected costs between those "*directly attributable*" to a portfolio and general overhead that is not considered in measurement and presentation of insurance contracts. This is a potentially disputable situation, and there are several possible ways of resolving the situation.

After identifying those internal costs that are considered in the measurement of insurance contracts, those costs might be differentiated regarding their function in fulfilling the insurance contracts. IFRS 17 distinguishes insurance acquisition cash flows from other internal costs. A further differentiation might arise in separating costs needed for the settlement of claims, which are considered in the insurance liability both in the liability for incurred claims and for remaining coverage. IFRS 17 is silent regarding how to accomplish this separation, which might be seen as an indication that normal cost accounting approaches, particularly allocations between functions, are appropriate.

In summary, the identification of costs, as estimated by the entity for future periods, considered in measurement might be split in three separate steps:

1) Exclude estimated costs that do not relate directly to the fulfilment of the contracts (paragraph B65).
2) Allocate the remaining estimated costs to functions, e.g., insurance acquisition cash flows, servicing contracts during their coverage period and settling claims based on normal cost accounting principles (paragraphs B65(e), (f), (h), (ka) and (l)).
3) Allocate the identified estimated costs per function to each group "*using methods that are systematic and rational, and are consistently applied to all costs that have similar characteristics*" (paragraph B65 (l)).

Actual incurred costs are split between insurance service expenses, insurance acquisition cash flows, and other costs presented outside the insurance service result.

**2.23. What are insurance acquisition cash flows?**

Insurance acquisition cash flows are defined (see Appendix A of IFRS 17) as "*cash flows arising from the costs of selling, underwriting and starting a group of insurance contracts (issued or expected to be issued) that are directly attributable to the portfolio of insurance contracts to which the group belongs. Such cash flows include cash flows that are not directly attributable to individual contracts or group of insurance contracts within the portfolio.*" These include direct payments, such as commissions, underwriting costs, and other costs of contract issue specific to a particular contract and also include such costs incurred for a portfolio. They might not include allocation of some overhead expenses.

To identify insurance acquisition cash flows within the contract boundary, it might be of relevance to consider the trigger of the cash flow. If a payment is contingent on persistency beyond the contract boundary, it might be seen as an insurance acquisition cash flow outside the contract boundary. Therefore, those costs are not included in the cash flows of the existing contract. In that case, the item is recognised in measurement only when the new contract is recognised. If the payment is contingent only on persistency within the contract boundary, it is generally considered an administration cost.

**2.24. When are insurance acquisition costs established as an asset?**

Whenever the insurance acquisition cost is incurred in a reporting period before the reporting period in which the contract or group of contracts (to which the acquisition cost is allocated) is recognised. Paragraph 28A requires an entity to allocate acquisition cash flows directly attributable to a group of insurance contracts between that group and to future groups expected to arise from renewals of those contracts. In most cases, this will only apply to short duration contracts, which are often measured on a PAA basis.

**2.25. How are insurance acquisition cash flows that have been established as an asset recognised and derecognised over time?**

Paragraphs B35A-D give the methodology for recognising and derecognising these assets.

Assets are recognised when acquisition costs are incurred / paid and are derecognised over time as the insurance contracts that generate the costs are recognised. At a reporting date, there will only be assets related to contracts and groups that have not yet been recognised at the reporting date. Paragraph B35D requires impairment tests to ensure that the asset related to each group does not exceed the net future cash flows of the group, and that any assets allocated to future renewals under B35A(a)(ii) do not exceed the net future cash flows of those renewals.

**2.26. How are insurance acquisition cash flows considered if paid prior to initial recognition of the related group?**

Insurance acquisition cash flows paid prior to initial recognition are reflected as paid and recognised as an asset. It is allocated using a systematic and rational method to the starting group of insurance contract and to the groups that are expected to arise from its renewals. When the related insurance contract is added to a group the related portion of the insurance acquisition cash flows is derecognised. An allowed exception to this recognition and derecognition is for groups using the PAA and if each contract in the group has a coverage period at initial recognition of 12 months or less when insurance acquisition cash flows are recognised as expenses (59(a)).

**2.27. How are insurance acquisition cash flows considered if paid in a reporting period (in the same year, in a subsequent year) after initial measurement (e.g., renewal commissions or asset-based commissions)?**

Insurance acquisition cash flows incurred after the initial sale are reflected in the same way as other future costs regardless of the period in which they are paid. That is, they are included in the contract's estimated future cash flows on an expected value basis. For example, if the payment of the commission is dependent on the contract continuing within the contract boundary, the probability of lapsation is reflected. In this sense, the commission is considered to be directly attributable costs.

**2.28. If agent/agency compensation is contingent upon agent/agency survival, how might those expenses be reflected (and if so, how might agent/agency turnover be considered)?**

These expenses are usually included in estimated future cash flows in the same way as other contingent cash flows, e.g., claim handling costs. Hence, if agent / agency turnover materially affects expected cash flows, this would be considered in determining estimated future cash flows whether the expenses are for acquisition or maintenance of the contract.

**2.29. What are some examples of expenses that are or are not insurance acquisition cash flows?**

Insurance acquisition cash flows include, but are not limited to:

- Sales commissions to sales personnel;
- Payments to managers of agencies or brokerages based on a percentage of commissions or other measurements of sales;
- Underwriting costs; and
- Contract set up costs.

The following might not be considered insurance acquisition cash flows:

- Payments to managers of agencies or brokerages not based directly on sales;
- Payments to managers of agencies or brokerages based on policy persistency; and
- Premium and commission processing costs.

### Other Cash Flow Issues

**2.30. Are any taxes included in cash flows?**

See paragraph B65. All transaction-based taxes (such as premium taxes, value added taxes, and goods and services taxes) and levies (such as fire service levies and guarantee fund assessments) are included in cash flows. Wage-based taxes, referred to as payroll taxes, social security taxes, and similar items are also included to the extent the wages they are based on are included. Any taxes paid on behalf of the policyholder are also included. If the impact of certain of these taxes is only the small difference of the time value of the incoming and outgoing cash flows, those impacts could usually be ignored based on materiality considerations but perhaps noted in disclosures.

Income taxes and other similar taxes levied on the entity are not included as a cash flow in contract measurement, even if they are reflected in benefits paid to policyholders, unless such taxes are paid in a fiduciary capacity on behalf of the policyholder or are specifically charged to the policyholder under the terms of the contract.

**2.31. Are there any special considerations for discretionary or voluntary payments to policyholders?**

For policyholder bonuses or dividends, see Chapter 8 – Contracts with Participation Features and Other Variable Cash Flows. Similar items on non-participating contracts (e.g., excess interest payments) will generally be measured in the same way they would be measured on a contract with participation features. For other discretionary cash flows of the entity, including any fair dealing in determining claims payable, whether their consequences are within or beyond the contract boundary would be considered. If the cash flows are with respect to services provided within the contract boundary, they may also be measured at the expected value. Otherwise, they are generally not included.

**2.32. How are policyholder dividends or bonuses projected for traditional participating contracts?**

See Chapter 8 – Contracts with Participation Features and Other Variable Cash Flows.

**2.33. How are delayed benefits, benefits that are expected never to be paid, or events that create rights contingent on future events (e.g., annuities to persons under third party liability, or joint life) accounted for?**

These benefits are normally included in the same way as other benefits – at their expected value. This may be different from previous accounting structures that, in some instances, measure such benefits only after the contingency happens.

**2.34. How are costs related to disputes accounted for?**

Expected future costs for settling known disputes are included in fulfilment cash flows. Specific possible future disputes not yet known are not explicitly considered, but a pattern of disputes, most notably litigation in the course of claim settlement, would be allowed for on an expected value basis.

**2.35. How are interest credits paid to policyholders projected?**

See Chapter 8 – Contracts with Participating Features and Other Variable Cash Flows.

**2.36. Where is there available guidance for estimating inflation and its effects on inflation-sensitive benefits, claims and expenses?**

Paragraph B128(b) provides guidance on when inflation risk is to be seen as non-financial risk. When seen as financial risk, paragraph B51 provides as an example a reference to observed market prices. A range of statistics is available in different countries. General living cost or wage indices might be useful for many cash flows, but building, medical, and other insurance relevant expenses may also have their own indices or may be responsive to specific factors other than general inflation. In addition, when inflation applies to the entity's internal expenses, the relative change in productivity and changes in the number of units can also influence trends in unit expenses. As long as observations can be made regarding (neutral) expected values of inflation in market prices for the specific cash flow to be measured, those observations have priority compared with the entity's expectations.

**2.37. How can cash flows on blocks of business with no prior experience or no relevant experience (e.g., new line of business for entity, mortality past age 90 or coverage durations longer than the product has been issued) be estimated?**

The best available relevant experience, including related internal experience and available data from the industry, may be considered and supplemented by documented judgment.

**2.38. How might cash flows on contracts covering multiple perils be developed?**

This depends on the nature of the contract and the nature of the perils.

For example, many contracts cover standard combinations of perils. In such cases, the standard combination might be treated as a single peril.

If the perils are fully independent, then simple addition can be used; however, if the data for one peril is insufficient for a reliable estimate, then estimating cash flows by peril may be inadvisable.

Interdependent perils (e.g., joint life and first death) may need to be adjusted for the probabilities of co-incidence.

**2.39. How might cash flows on a single contract with multiple insured items, particularly if there is an open number of insured items in the contract (e.g., a group life contract or a corporate auto contract) be adjusted for added or deducted insured items?**

Where an additional premium is to be negotiated when the extent of the insurance (e.g., lives in group life, health, or disability; wages in workers compensation; and underlying insurance in the case of reinsurance) is added to, estimates may be made on the basis of the extent of the insurance active at the measurement date, but in general only if the additional insurance is beyond the contract boundary before it is added.

More usually, if the entity is constrained to accept such additional insurance within the existing insurance, this brings it within the contract boundary, and an expected value approach is appropriate for estimating both the additional premium and the extent of the insurance that will be covered within the contract boundary.

Where a fixed premium is charged even if the extent of the insurance can change within the contract boundary, then an expected value approach is appropriate for estimating the extent of the insurance that will be covered within the contract boundary.

### Changes in estimates

**2.40. How often are estimates re-evaluated?**

Estimates must be re-evaluated at every reporting date (paragraph B54).

**2.41. How often are assumptions re-evaluated?**

In compliance with paragraphs 33(c) and B54-B60, assumptions must be re-evaluated at every reporting date.

- Assumptions for estimating market variables should be based on market prices at the reporting date.

- For other assumptions, continuity and consistency of process are usually appropriate and any discontinuities should be highlighted.
- Where claim assumptions are based, in whole or in part, on claim experience data, regard should be had to the credibility of that data, and the assumptions adjusted accordingly.
- Where standard tables are used, their continuing suitability should be considered, and adjustments made as appropriate. Small, frequent adjustments are preferable to big changes.
- Existing trend assumptions may need to be reviewed to assess whether current data support the assumed trend or suggest that it be revised.

## Chapter 3 – Discount Rates

Before consulting this chapter, be sure to read the Introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

### 3.A. What does this chapter address?

This chapter discusses practices related to interest rates, yield curves, discounting and replicating portfolios for insurance contracts as required by IFRS 17. First the general principles for discounting within IFRS 17 are discussed in questions 3.1–3.10. Discount rates used for cash flows that do not vary based on the returns on underlying items are discussed in questions 3.11–3.25. Discount rates for cash flows that do vary based on the returns on underlying items[12] are discussed in questions 3.26–3.32. Discounting related to the premium allocation approach (PAA) is covered in questions 3.33–3.36 and locked-in discount rates are discussed in questions 3.37–3.46.

### 3.B. Which sections of IFRS 17 address this topic?

Paragraphs 36 and B72–B85 provide guidance on this topic.

Related sections are paragraphs B44–B48 (on market variables) and paragraphs 87, 110–113 and B128–B136 (on insurance finance income and expenses).

Paragraphs BC 19, BC 185 – BC 205, and BC 212 also provides background on the subject.

### 3.C. What other IAA documents are relevant to this topic?

The IAA has published a monograph on discount rates, "Discount Rates in Financial Reporting: A Practical Guide", October 2013.

#### General topics

### 3.1. What are the general principles related to discounting within IFRS 17?

An amount payable today has a different present value from that of the same amount payable in the future. In other words, money has a time value. Discount rates are used to adjust cash flows to reflect the time value of money. The following general principles underpin the discounting guidance within IFRS 17.

**Principle 1:** Estimates of future cash flows are adjusted for the time value of money and the financial risks related to those cash flows, to the extent that the financial risks are not included in the estimates of cash flows (paragraph 36).

**Principle 2:** Discount rates are reflective of whether the cash flows vary based on the returns on any underlying items (paragraph B74).

[12] In most instances the standard refers to 'cash flows that do not vary based on the returns on any underlying items' and 'cash flows that vary based on the returns on any underlying items.' Only in paragraph B74b did the standard refer to 'cash flows that vary based on the returns on any financial underlying items.' For the purposes of this IAN all references will be to 'underlying items.'

- For some insurance contracts, e.g., most non-life insurance and non-participating traditional term life or non-participating whole life insurance, the cash flows are not dependent on underlying items. IFRS 17 refers to these products as having *cash flows that **do not** vary based on the returns on any underlying items*. The discounting for these cash flows is discussed in questions 3.11–3.25;
- Other insurance contracts, e.g., unit-linked universal life insurance, variable annuities, and traditional product with benefits depending on profit sharing may have cash flows that are dependent on underlying items. IFRS 17 refers to these products as having *cash flows that vary based on the returns of any underlying items*. The discounting for these cash flows is discussed in questions 3.26–3.32;
- Based on the definitions in the standard, the distinction between cash flows that do vary based on the returns on underlying items and cash flows that do not vary based on underlying items is not equal to the distinction between insurance contracts with direct participation features and insurance contracts without direct participation features. This is further explained in question 3.9.

**Principle 3:** The discount rates applied to the estimates of the future cash flows reflect the characteristics of the cash flows and the liquidity characteristics of the insurance contracts (see paragraph 36a).

- The discount rates applicable to fully liquid instruments are discussed in question 3.11;
- The liquidity characteristics of insurance contracts are discussed in questions 3.15–3.18.

**Principle 4**: The discount rates are consistent with observable market prices, if any, for financial instruments with cash flows whose characteristics are consistent with those of the insurance contracts and they shall exclude the effect of factors that influence such observable market prices but do not affect the future cash flows of the insurance contracts (paragraphs 36b and 36c).

- The concept of a reference portfolio is discussed in question 3.14.
- It may be possible to determine the discount rates for a collective of insurance contracts by identifying a replicating portfolio. This is discussed in question 3.30.

**Principle 5**: Estimates of discount rates are consistent with other estimates used to measure insurance contracts to avoid double counting or omissions (paragraph B74). For example, if nominal cash flows include the effect of inflation, they are discounted at rates that include the effect of inflation. Similarly, when discounting cash flows that vary with underlying items, the discount rates would reflect that variability (see questions 3.27 and further).

### 3.2. For which purposes are discount rates required?

Paragraph B72 lists the purposes for which discount rates are required.

| *An entity shall use the following discount rates in applying IFRS 17*: | |
|---|---|
| a) *to measure the fulfilment cash flows – current discount rates applying paragraph 36.* | Discussed in questions 3.11-3.25 |
| b) *to determine the interest to accrete on the contractual service margin […] for insurance contracts without direct participation features – discount rates determined at the date of initial recognition […].* | Discussed in question 3.37 |
| c) *to measure the changes to the contractual service margin […] for insurance contracts without direct participation features – discount rates […] determined on initial recognition.* | Discussed in question 3.38 |
| *d) for groups of contracts applying the premium allocation approach that have a significant financing component, to adjust the carrying amount of the liability for remaining coverage […] – discount rate […] determined on initial recognition.* | Discussed in questions 3.34 and 3.35 |
| *e) If an entity chooses to disaggregate insurance finance income or expenses between profit or loss and other comprehensive income (IFRS 17.88), to determine the amount of the insurance finance income or expenses included in profit or loss:* | |
| *(i) for groups of insurance contracts for which changes in assumptions that relate to financial risk do not have a substantial effect on the amounts paid to policyholders […] – discount rates determined at the date of initial recognition […];* | Discussed in question 3.39 |
| *(ii) for groups of insurance contracts for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to policyholders […] – discount rates that allocate the remaining revised expected finance income or expense […] at a constant rate; and* | Discussed in question 3.40 |
| *(iii) for groups of contracts applying the premium allocation approach […] – discount rates determined at the date of the incurred claim […].* | Discussed in question 3.36 |

### 3.3. How are liquid risk-free rates determined in the context of IFRS 17?

A liquid risk-free yield curve is discussed in paragraphs B80 and BC193 – BC196. It is the basis of the bottom-up approach which is discussed in question 3.11. The liquid risk-free

curve may not be required in the top-down approach (which is discussed in question 3.13).

As IFRS 17 is principle based, it does not prescribe the details how to derive the liquid risk-free yield curve. Favourable characteristics for market quoted interest rates used in deriving a liquid risk-free yield curve might include those quoted interest rates:

- Being reliable and liquid;
- Containing no or negligible credit risk; and
- Having quoted/maturity dates for a wide range of terms/durations.

To set an entire curve, practitioners may, in some cases, consider using more than one security type or market index / reference rates to derive the overall curve. Thus, deriving the liquid risk-free curve may involve judgement.

Some options and considerations that might be applied are set out below[13]:

a. Government bond rates

Politically stable governments in economically developed countries are commonly believed to have a low probability of defaulting on their debts. This is because governments in such countries have taxing power and the ability to expand money supply (which is not the case for all governments). The rating of government bonds can be used as an indicator as to whether the bonds of the specific government may be considered risk free or of negligible credit risk.

In the situation of a currency union, a basket of government bonds with a high rating might be used. In the situation of a currency union, an individual government does not have the ability to expand the money supply which may cause credit risk. Also, national governments can issue debt. If non-negligible credit risk is present, an approach that estimates the credit risk component so that it might be removed is described in question 3.19 below.

Apart from the credit risk, the available maturities and the liquidity of the government debt market varies between governments. These may be factors when choosing between government bonds and alternative bases for the risk-free curve development.

b. Swap Curve

In many markets swap curves are observable and available for a range of terms. In some cases, they are more liquid and available for a greater range of terms than government securities.

Swaps are often used as instruments for replicating and hedging interest rate risk which makes them a natural reference to derive risk-free interest rates for certain

[13] Other publications on the subject could help the practitioner to derive such a curve (for example: (EIOPA, 2018), (IAA, 2013)).

currencies. Furthermore, swap contracts are typically collateralised and there is no risk on the principal value associated with the swap agreement, which substantially reduces the exposure to losses associated with a credit default event. For example, the EIOPA Solvency II approach[14] uses Swap Rates for currencies with deep financial markets.

Quoted swap rates may have to be adjusted in order to reflect:

- The counterparty credit risk: A party who is receiving a fixed interest rate (i.e., fixed / quoted leg) from another party is likely to require a premium on top of the interest rate to compensate for the risk related to future interest payments on the fixed leg in excess of the floating leg. The "swap rate" will include an allowance for credit risk and an adjustment would be required, taking into account collateralisation requirements.
- The underlying reference security credit risk: If swap rates are based on the yield of an underlying reference security with material credit risk premiums these risk premiums would need to be removed to obtain a risk-free rate.

Understanding the basis underlying quoted rates is important when choosing any adjustment in relation to counterparty risk. Similarly, understanding the underlying reference securities is important when choosing any adjustment for credit risk.

c. Corporate Bond Rates

Corporate bond rates are not risk free although in some jurisdictions, it may be the most widely traded market. Credit risks need to be considered in the context of corporate risks. Techniques that might be considered when using corporate bonds rates are similar to those presented in question 3.19.

**3.4. How can risk free rates be determined if there is not a well-developed bond or swap market?**

When, for a given currency, there is not a well-developed bond or swap market other approaches may be considered. Two situations can be distinguished:

a. The local currency is pegged to another currency;

b. The local currency is not pegged to another currency.

*The local currency is pegged to another currency*

The suitability of this approach depends upon adequately allowing for any risks that the level of the peg may change. This risk causes a spread on rates in the local currency. Evaluating this risk may require particular care given that in these situations there may be a lack of forward exchange rate contracts which, if they were available, would be one source of a market observable measure of the risk of the peg changing. Observed

[14] Note that the volatility adjustment may not be appropriate under IFRS 17.

deviations in the past from the pegging policy may be an indicator for a correction on the targeted difference.

*The local currency is not pegged to another currency*

Short nominal rates may be derived from the rate the central bank offers for deposits. For long durations, one might consider using a global real rate plus a compensation for the inflation the local central bank is targeting. The targeted inflation may be adjusted using expert judgement if for example the risk of higher inflation in the long run is considered realistic. Observed differences in the past between the targeted inflation rate and the realised inflation rate may be an indicator for the need of an adjustment. In the globalised economy differences between real rates in developed countries have declined. However, it might be appropriate to consider whether that narrowing will remain. For the estimation of a global real rate, an option is to use a basket of high rated government bonds or swap rates. It is a matter of judgment how much weight is put to each country. One might use, for example, the GDP as a weight.

Local real rates may deviate from the global real rate if there is a strong demand for loans when a country is in a developing phase. An estimation of a difference between the local risk-free real rate and the global risk-free real rate in the long run is difficult. This is a matter of judgement. Estimation of the rate of inflation in the long run could be an even a bigger challenge. It comes largely down to expert judgement.

If quotes for forward exchange rate contracts are available, this information can be used to convert risk-free rates in other currencies to the rate for the local currency.

### 3.5. How is inflation reflected?

Paragraph B74 states that *nominal cash flows (i.e., those that include the effect of inflation) shall be discounted at rates that include the effect of inflation. Real cash flows (i.e., those that exclude the effect of inflation) shall be discounted at rates that exclude the effect of inflation*.

Cash flows subject to inflation may therefore either

(i) be projected including the effects of inflation and discounted with a nominal rate; or

(ii) be projected without inflation and discounted with real rates.

There are several potential methods that may be suitable for deriving inflation and / or real interest rate expectations. Some potential methods and aspects to consider in their application are discussed below. The considerations listed may not be exhaustive.

- ***Market based approaches***

  Estimating inflation by taking the difference between nominal bond yields and inflation-linked bonds. The difference may need to be adjusted to exclude the effect of any perceived inflation risk premium. This method requires limited judgement where the issuer / credit risk of the bonds is the same, otherwise judgement / subjectivity is involved in making further adjustments for differences in yield due to credit risk. More

considerations may be required because in some markets, while the nominal bond market is considered reliable and well-functioning, the index-linked bond yields may be biased because of smaller volumes on issue and other supply/demand factors. This would then bias the derived estimate of inflation.

Inflation swaps/other market instruments – investment banks or other traders may offer contracts with a payout that is linked to future inflation. These may not be common, causing possible biases given limited availability. Where such trades occur, the prices may not be readily and publicly available. Nonetheless, where such information is available it may assist by providing insight into market information on inflation estimates.

- ***Publicly available estimates***
  - Central bank targets for inflation.
  - Forecasts of economic commentators and/or government bodies.
  - Views of a long-term real risk-free rate. This is discussed further in question 3.24. This may assist with setting the long-term inflation estimate but is likely to be less helpful in setting short-term estimates.

  Publicly available estimates may not be the same as the results of market-based approaches or may not align with realised inflation over time for the cash flows. If public estimates and market-based approaches are not similar over a given time horizon, then an evaluation of the causes of difference may be useful. The appropriate adjustments will be based on the cause of the differences.

  Potential causes of differences include:

  - The corresponding central banks may not always achieve their targets which may lead to different economic expectations over the long run;
  - Market based estimates can be biased due to limited volume of transactions available.

Some cash flows of an insurance contract may be linked to salary inflation which, over time, is likely to differ from a commonly available index such as the consumer price index (CPI).

Future cash flows may depend on an inflation index that is not equal to the CPI. If this is the case, the appropriate inflation expectation would need to be used in the measurement, or in accordance with paragraph B74d, where the inflation component is excluded from both the cash flows and the discount rate. Whilst projected CPI (in this example) would be considered part of financial risk for measurement purposes, inflation assumptions for expenses or other cash flows could be considered non-financial risk (as per IFRS17.B128), with implications for presentation and the determination of the risk adjustment.

**3.6. Is 'own credit risk' reflected in discount rates under IFRS 17?**

No, non-performance risk (defined in IFRS 13 Fair Value Measurement) related to the entity that has issued the insurance contract, as 'own credit risk', is not reflected in the discount rates (see paragraph 31).

Non-performance risk with respect to reinsurers is included in the projection of future cash flows for reinsurance contracts held. See question 9.9.

With respect to application of fair value, defined in IFRS 13, in the context of IFRS 17, see question 10.5.

**3.7. Are investment administration costs reflected in discount rates (or cash flows) under IFRS 17?**

There is no direct guidance in the standard about this topic, but some information can be found in paragraph BC201 which states:

- *to the extent that the cash flows from underlying items affect the cash flows that arise from the liability, the appropriate discount rate should reflect the dependence on the underlying items; and*
- *to the extent that the cash flows are expected not to vary with returns on underlying items, the appropriate discount rate should exclude any factors that influence the underlying items that are irrelevant to the contracts. […] Thus, the discount rate should not capture all of the characteristics of those assets, even if the entity views those assets as backing those contracts.*

Only investment administration costs that affect the return of the underlying items would be reflected in the cash flows. Other investment administration costs are not relevant to insurance contracts.

**3.8. How are discount rates updated?**

Paragraph 36 (b) requires that the discount rate *be consistent with observable current market prices (if any) for financial instruments with cash flows whose characteristics are consistent with those of the insurance contracts, in terms of, for example, timing, currency and liquidity*. Observable current market prices correspond to the value of market instruments at the reporting date and are therefore updated at each subsequent reporting period to remain current. Unobservable inputs for which estimation techniques are necessary are developed using the best information available in the circumstances applying paragraph B78 (a). These might be updated less frequently than every reporting period. All financial assumptions used to derive yield curves are expected to be appropriate at the reporting date.

**3.9. Do contracts with cash flows that vary based on the returns on underlying items meet the definition of insurance contracts with direct participation features and vice versa?**

Not necessarily. Contracts with cash flows that vary based on the returns on underlying items may meet the definition of insurance contracts with direct participation features in Appendix A, but this not always the case.

Note that all contracts with direct participation features, by definition, have contractual terms that specify that the policyholder participates in a share of a clearly identified pool of underlying items. These underlying items are mostly (but not always) at least partially financial in nature and the contracts have cash flows that vary based on the returns on underlying items.

For contracts with sharing of returns on underlying items that do not meet the definition in Appendix A of IFRS 17, the GMA is used, while for 'contracts with direct participation features', the VFA is used. In this chapter, we distinguish between "cash flows that do not vary based on the returns on any underlying items" and "cash flows that do vary based on the returns on any underlying items" in order to describe the techniques deriving appropriate discount rates for the discounting of the fulfillment cash flows. A further explanation of participation features and the description of underlying items can be found in Chapter 8 "Contracts with participation features and other variable cash flows".

**3.10. Can an effective (constant) discount rate be used in IFRS 17, instead of a discount curve?**

As discussed in question 3.2, there are different purposes for discount rates in IFRS 17. Many practitioners believe that to calculate the fulfilment cash flows the use of a discount curve is required to be consistent with paragraph 36. In this context, a single effective discount rate might provide information but is unlikely to have broader uses.

See question 3.43 for a discussion of effective constant discount rates in the context of the locked-in curve.

### Cash flows that do not vary based on the returns on any underlying items

**3.11. How are cash flows that do not vary based on the returns on any underlying items discounted?**

Paragraphs B80 to B85 establish two methods to determine rates for discounting cash flows that do not vary based on the returns of underlying items, the bottom-up approach (paragraph B80) and the top-down approach (paragraphs B81 to B85). The discount curve for cash flows that do not vary based on the returns on any underlying items can also be used to discount cash flows that vary based on the returns of underlying items. Therefore, questions 3.11 to 3.25 are also relevant for cash flows that vary based on the returns on any underlying items. For the discounting of cash flows that vary based on the returns of underlying items additional considerations apply which are explained in the next section.

Both the bottom-up approach and the top-down approach are briefly discussed in paragraph BC196: … (a) a '*bottom-up' approach based on highly liquid, high-quality bonds, adjusted to include a premium for the illiquidity. (b) a 'top-down' approach based on the expected returns of a reference portfolio, adjusted to eliminate factors that are not relevant to the liability, for example market and credit risk. The Board expects a reference portfolio will typically have liquidity characteristics closer to the liquidity characteristics of the group of insurance contracts than highly liquid, high-quality bonds. Because of the difficulty in assessing liquidity premiums, the Board decided that in applying a top-down*

*approach an entity need not make an adjustment for any remaining differences in liquidity characteristics between the reference portfolio and the insurance contracts*.

Following the approach set out in paragraph BC196, a reference portfolio would need to be defined if using the top-down approach. For the bottom-up approach, an illiquidity premium has to be estimated, which might also use a reference portfolio.

As per paragraph B81 the entity is not required to reconcile the bottom-up approach with the top-down approach.

The choice of reference portfolio may be different for different portfolios of insurance contracts. If there is a close link between assets and liabilities for some portfolios, a reference portfolio of own assets may be more feasible than for portfolios of insurance contracts where there is not a close link with the assets.

**3.12. How does the bottom-up approach work?**

The bottom-up approach is described in paragraph B80 as:

a. a liquid risk-free yield curve;

b. adjusted to reflect the liquidity characteristics of the insurance contracts.

**3.13. How does the top-down approach work?**

An entity may determine appropriate discount rates for insurance contracts using a top-down approach (paragraph B81). Under this approach, discount rates are based on current market rates of return of a reference portfolio of assets which are adjusted to remove returns related to risk characteristics embedded within the reference portfolio that are not inherent in insurance contracts. These adjustments are discussed in questions 3.19 and 3.20.

IFRS 17 does not require that adjustments be made for residual differences in liquidity characteristics of the insurance contracts and the reference portfolio. However, the entity would adjust for differences if the liquidity characteristics of the assets in the chosen reference portfolio are not reasonably consistent with the liquidity characteristics of the insurance contracts, as discussed in questions 3.15–3.18.

**3.14. What is a reference portfolio?**

IFRS 17 has no specific requirements for the reference portfolio. It could be based on actual assets held by the entity or on a reference portfolio of assets. However, the closer the reference portfolio reflects the characteristics (e.g., liquidity) of the insurance contracts for which the discount rate is being developed, the smaller adjustments are likely to be needed in the discount rate. When the reference portfolio (if it is the actual assets held by the entity) significantly changes, an assessment on whether the reference portfolio still reflects the characteristics of the contracts materially would be done.

Factors that may differ between the characteristics of a reference portfolio and that of a group of insurance contracts include, but are not limited to:

i. **Investment risks**: Investment risk can consist of credit risk, market risk, and other price risks that are inherent in the reference portfolio and are not inherent in the insurance contracts. Methods used to adjust for these elements are discussed in question 3.19 (credit risk) and question 3.20 (market and other risks);

ii. **Timing**: The timing of cash flows within the reference portfolio may not be the same as that of the insurance contracts. Adjustments may be considered, based on observable assets traded in active markets or on estimation techniques if the market is not active or no market exists. Estimation techniques for discount rates on long duration cash flows are discussed in questions 3.22–3.25; and

iii. **Currency**: The reference portfolio of assets may contain assets that are in a different currency than the insurance contracts cash flows. One approach to adjust for the different currencies might be currency swaps.

Note: a reference portfolio is different from a replicating portfolio (paragraph B46) which exactly matches cash flows of the insurance contract in amount, timing and uncertainty, for all scenarios.

**3.15. What are the liquidity characteristics of insurance contracts?**

Paragraph 36 states that the discount rates applied should reflect the liquidity characteristics of the insurance contracts.

In order to understand the nature of insurance contract liquidity characteristics one may consider the liquidity characteristics of other financial instruments: for fixed income financial instruments, liquidity is the ability to convert the asset into cash or extinguish the liability on demand. The liquidity arises from either call or put options embedded into the instrument or the marketability of the instrument.

Paragraph BC193 specifically draws the parallel between insurance contracts and fixed income financial instruments and suggests that liquidity characteristics of insurance contracts be viewed from the perspective of the features embedded within the contract. This view is also echoed in the IAA Discount Rate Monograph which, on page 38 of section IV, states: *the liquidity of a liability is a function of the basic contract provisions, and especially any options that might exist for the policyholder that would impact the uncertainty regarding the amount and timing of payments*.

This answer addresses the liquidity characteristics of insurance contracts from the perspective of the contract's features.

Note that this answer focuses on qualitative assessments of insurance contract liquidity. See response to question 3.16 for a discussion on the quantitative assessment of illiquidity premium.

Contract attributes that may influence the liquidity of an insurance contract include:

- **Exit value:** all else being equal, a contract where upon exit all / a large part of the value build-up is paid out is more liquid than one that pays out none or a small part of the value build-up. If on exit of a contract there is:

  - Value in the contract and the policyholder receives all/a large part of the value of the contract, then the contract may be considered to be liquid.
  - Value in the contract and the policyholder receives no/a small part of the value of the contract, then the contract may be considered to be illiquid

- **Inherent value/value build-up**: If a contract's pricing/construction is such that there is negligible/no inherent value then, other than any exit costs, it is likely to be considered liquid. If on exit of a contract there is:
  - little inherent value in the contract and there are no costs to exit the contract then the contract could be considered to be liquid;
  - little inherent value in the contract and there are costs to exit the contract then the contract could be considered to be illiquid.

  The concept of exit value aligns with the payments (that would actually be received by the contract holder) as referred to in paragraph BC193 which implies that illiquidity exists if "*the entity cannot be forced to make payments earlier than the occurrence of insured events or dates specified in the contract.*"

- **Exit costs:** all else being equal, a contract with exit costs (e.g., surrender charges / penalties) is likely to be more illiquid than one without. Note exit is contemplated as voluntary exit / cancellation of contract and occurrence of the insured event is not considered a contract exit, as contemplated in this response.

- **Inherent value / value build-up:** The inherent value / value build-up represents the contract holder's perceived value of the contract. The inherent value would include the payment the contract holder might reasonably expect to receive, if the contract holder could force the entity to make a payment. Paragraph BC193 suggests that illiquidity exists if "*the entity cannot be forced to make payments earlier than the occurrence of insured events or dates specified in the contract.*"

  For example, one could approximate the inherent value prospectively as the present value of the benefits expected to be received less the premiums that remain to be paid, within the contract boundary. Qualitatively the inherent value, may also capture other considerations such as insurability considerations or considerations regarding the cost of a replacement contract. The inherent value would be less than the insured amount, given that the insured event has not occurred.

  For example, yearly renewable non-life insurance contracts whose design are not intended to build-up value in the contract and are without exit costs, are likely to be considered liquid (for the liability for remaining coverage).

  For contracts with no cash value, increasing risk and level premium payment, contracts with longer contract boundaries are less liquid than contracts with shorter boundaries as the extended boundary leads to greater inherent value / value build-up.

Ultimately, in all examples, above, the illiquidity is affected by the disparity between inherent value and exit value:

- The liability for remaining coverage for a contract with little inherent value/value build-up is likely to be liquid
- The liability for remaining coverage for a contract with a lot of inherent value/value build-up and comparatively large exit value (no significant surrender penalty) is likely to be liquid
- The liability for remaining coverage for a contract with a lot of inherent value/value build-up but little to no exit value is likely to be illiquid

Policyholder behaviour such as lapse and surrender activity for groups of insurance contracts may be an indicator of liquidity (similar to the trading activity of an asset).

The Liability for incurred claims would be considered illiquid when there is no potential avenue for the claimant to obtain an exit value yet there is tangible inherent value (else a claim would not have been made.)

The repayment of unearned annual premiums on exit of a contract is not considered to be an exit value payment in this context as they are a repayment of prepaid premiums and not of the value build-up. Therefore, contracts with annual premiums would have similar liquidity characteristics as the same contract with monthly premiums. Forfeiture, though, of annual premiums on exit when no penalty would have existed for monthly premium policyholders, may mean different liquidity characteristics.

The liquidity of an insurance contract could vary over time (after the date of inception of the contract). For example:

- The twenty-year term insurance example could be considered to be more liquid in the contract's first year than in the contract's fifteenth year based on the growing value of initial underwriting no longer being recent.
- The contract with high cash surrender value could be viewed as less liquid in the contract's tenth year than in the contract's fifteenth year based on the exit value receivable.

In any case, it is acceptable practice that an overall assessment / categorisation be made, consistent with the response in question 3.17.

One contract feature that is unlikely to affect the liquidity of insurance contracts is the predictability (or lack thereof) of the contract's cash flows. The risk adjustment for non-financial risk reflects the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk.

An environmental feature that is unlikely to influence the liquidity characteristics of a contract is the potential for viatical settlements. 'Viaticals' provide policyholders, who may not place a high value on any remaining death benefits, with a payment from a third party for their contract where no or little exit value might exist as part of the contract

feature. However, since the contract features remain unchanged and assuming that the insurer's required payment is only made upon occurrence of the insured event, the existence and depth of a viatical market would seem to affect the calculation of probability weighted cash flows (e.g., by affecting the probability of lapse) but would not affect the contract's liquidity.

**3.16. How can the liquidity characteristics of insurance contracts be quantified?**

The adjustment to reflect the liquidity characteristics of the insurance contracts has been broadly termed the illiquidity premium. Highly liquid insurance contracts would have a low (or even no) illiquidity premium while very illiquid contracts would have a higher illiquidity premium.

There is no general accepted practice yet for the quantification of the illiquidity premium. Data relating to illiquidity premium of insurance contracts is generally not directly available in the market. Looking beyond insurance contracts, market prices for liabilities where the issuer of debt has the possibility to redeem the debt early are also very limited.

A theoretical approach to determine the illiquidity premium is to assess possible replicating portfolios. Using that approach a reference portfolio is used for the derivation of the illiquidity premium. Note that this reference portfolio is a different concept than the reference portfolio for the top-down approach. This is discussed in question 3.30. Some practical approaches of estimating illiquidity premiums for insurance contracts include:

- Using a reference portfolio and determining its illiquidity premium using top-down techniques (see questions 3.19–3.20); and
- Comparing yields on illiquid and liquid assets, both with the same or similar degree of credit risk. The commonality in these approaches is that the instruments are considered to have the same degree of credit risk and as such the spread difference would be largely attributable to liquidity. For example:
    - Covered vs risk-free bonds: Covered bonds are illiquid bonds which are backed by collateral and as such, are considered safe;
    - Public and private debt issued by the same issuer; and
    - Highly liquid and less liquid mortgage backed securities.

If the asset portfolio used in estimation is more, or less, liquid than the insurance contracts being considered, then additional adjustments may be needed.

What follows is an example of a simple method used to relate the illiquidity premium of insurance contracts to asset portfolios:

*Assume liability illiquidity premium = r * asset portfolio illiquidity premium + constant illiquidity premium difference* where the constant term and multiplicative factor (r) are set based on judgment and any available data. In the selection of the factors differing market environments may be taken into consideration. For example, using a high multiplicative factor(r) and a constant = 0 may not produce an appropriate result

during a credit crisis. It may be difficult to justify insurance contracts having a higher illiquidity premium than the return on assets available for investment earning the illiquidity premium. This, however, is not a directly relevant factor in setting the illiquidity premium level.

The above approach is based on a top-down approach. For those using bottom-up there may be a discernible relationship between the level of the illiquidity premium and other market data such as the level of risk-free rates and / or the level of total asset spreads. For example, one may expect a different illiquidity premium in a 10% rate environment compared to that in a 5% environment. However, if analysis showed the same level of total asset spreads in these disparate environments, and the credit part of the spread was also showed to remain constant, then the level of illiquidity premiums in these environments might be the same.

Little is known about the term structure of illiquidity premium in current research. One reference that discusses the term structure of the illiquidity premium is (Kempf, 2011). Note that if the liquidity characteristics vary over time, then the implicit illiquidity premium in the discount rate would also be expected to vary over time. This being said, IFRS 17 does not specifically require this to be taken into account when establishing the illiquidity premiums.

When an asset portfolio is used to build the illiquidity premium proxy, the pattern of illiquidity can be derived from the illiquidity premiums estimated based on assets with different maturities within the portfolio. However, when there is some lack of data to estimate the illiquidity premium (e.g., there is no observable market rates for some duration), another reasonable assumption shall be used (e.g., last observable illiquidity premium, convergence toward an ultimate illiquidity premium, …). Materiality / modelling and operational considerations will also influence the approach choice.

An important caveat in setting the illiquidity premium is discussed in paragraph B90 which states the discount rates should not include any implicit adjustments for non-financial risk. The illiquidity premium corresponds to the estimate reflected in the future cash flows while uncertainty attributable to non-financial risk is reflected in the risk adjustment for non-financial risks. In estimating these values, paragraph B90 states that double counting should be avoided.

### 3.17. Are different products expected to have different illiquidity premiums?

Insurance contracts exhibiting different features may have different terms and conditions for the forced early payments (see paragraph B79), exit costs, inherent value and / or exit value. As such, products are expected to have different illiquidity premiums. For operational reasons, insurance contracts with similar liquidity characteristics can be regrouped together in buckets, in order to perform the illiquidity premium estimation for the bucket as a whole. The buckets (similar liquidity characteristics) should not be confused with the portfolios (similar risks and managed together). Two insurance contracts included in the same portfolio could be allocated to two different buckets.

Likewise, two insurance contracts belonging to the same bucket could be included in two different *portfolios*.

**3.18. If a contract is reinsured, would the direct issuer use the same illiquidity premium when valuing the direct and the ceded contract?**

The illiquidity premium from the reinsurer's perspective is not in scope for this question as it would be determined in accordance with the previous questions.

Paragraph 63 states that "*the entity shall use consistent assumptions to measure the estimates of the present value of the future cash flows for the group of reinsurance contracts held and the estimates of the present value of the future cash flows for the group(s) of underlying insurance contracts*".

This consistency is required to the extent that both the underlying contracts and the reinsurance contracts share the same characteristics. This requirement does not necessarily permit the entity to use the same assumptions used for measuring the underlying contracts when measuring the reinsurance contracts if those assumptions are not valid for the terms of the reinsurance contracts held. If different assumptions apply for the reinsurance contract, the entity uses those different assumptions when measuring that contract.

The key difference arises due to termination conditions.

**3.19. How could the reference portfolio be adjusted for credit risk?**

In the top-down approach, the effect of credit risk in debt instruments would need to be eliminated from the total bond yield. The effect of credit risk usually comprises two components: the expected credit losses and the unexpected credit losses (i.e., compensation for bearing that risk). There is a wide range of practices used to estimate the required deduction for credit risk inherent in bond yields. Observed practices include:

i. ***Market-based techniques:*** A credit default swap (CDS) spread, where available, is used as a measure of the inherent credit risk in bonds and comprise the expected as well as the unexpected credit losses. An advantage of this approach is that the inherent bond credit risk is directly and instantly reflected in the CDS spread. A disadvantage is that it may capture additional risks (e.g., counterparty credit risk) and costs and, as such, may overestimate the bond credit risk. On the other side the CDS premium reflects the possibility that the CDS provider may default – and therefore the CDS premium is lower than it would be were this not the case – and therefore the observed CDS premium could underestimate the true bond credit risk (where this is the case, then it can result in the illiquidity premium being overestimated). Note that it is necessary to ensure that the CDS and the bond are consistent so that the spreads are comparable.

ii. ***Structural-model techniques*** such as the Merton Model, Leland and Toft Model and EDF-Based Model. These models put in relation the capital structure of an entity to an option on the equity of the same entity and the value of its debt. For further

information see the IAA Discount Rate Monograph Section IV and Agrawal, Arora and Bohn.[15]

iii. ***Expected/Unexpected Credit Loss (ECL/UCL) models***: ECL models usually comprise an estimation of the probability of defaults (including the future cost of downgrades) and an estimation of the loss given default. One could leverage on models developed for calculating the IFRS 9 lifetime impairment provision (e.g., one-parameter representation of credit risk with transition matrices[16], …). Usually based on historical information, point-in-time adjustments might be needed to calibrate estimates to current market conditions and forward-looking information (e.g., Multi-state Markov Modeling[17], probit/logit models[18], …). UCL models could be based on an adjustment to reach a selected percentile credit loss level (confidence level approach). UCL could also be estimated as the compensation required by an investor to bear the credit risk associated with the instrument (cost of capital approach).

Note: Several of the above approaches used to estimate the deduction for credit risk are complex and as such it has been observed that insurers have typically simplified expressions for the deductions required for credit risk and calibrating these expressions based on the above approaches. Examples of such expressions include:

a. Deduction for credit risk = Expected Default Rate + X% (Total Bond Spread – Expected Default Rate)

b. Deduction for credit risk = X% (Total Bond Spread)

c. Deduction for credit risk = Expected Default Rate * (1+factor for unexpected default)

**3.20. How could the reference portfolio be adjusted for other risks?**

As mentioned in paragraph B85, IFRS 17 does not specify restrictions on the reference portfolio of assets used in applying paragraph B81. Non-fixed income assets (e.g., equity or real estate investments) may also be considered in the reference portfolio. However, the estimation process of the illiquidity premium related to these assets may be much more challenging since many risks are specific to these investments and not related to the insurance contract characteristics. Here are some examples: systematic market risks (recessions, natural disasters, geopolitical events …), tax effects, asset deterioration, variability in amount and timing of dividend, the risk of delay in finding a new tenant, obsolescence and unexpected deterioration.

For fixed income assets, other market factors, such as market sentiment and market inefficiencies, might also influence the reference portfolio yield and might result in some

[15] Agrawal, Arora and Bohn

[16] A one-parameter representation of credit risk and transition matrices, JP Morgan

[17] Multi-State Markov Modeling of IFRS9 Default Probability Term Structure in OFSAA, Oracle Whitepaper

[18] Bank default prediction models, A comparison and an application to credit rating transitions, Stefan van der Ploeg

fluctuations in the overall spread. Such factors are difficult to quantify, making the estimation of adjustments even more challenging. Unless measured and treated separately, these factors might be attributed to the illiquidity component.

**3.21. To what extent do changes in actual assets held affect the discount rates?**

IFRS 17 permits an entity to not adjust for liquidity differences, therefore the changes in the portfolio's liquidity could be reflected in the changes in the discount rates used to measure the related insurance contracts, even if the liquidity characteristics of the insurance contracts themselves have not changed. As mentioned in paragraph B85, IFRS 17 does not specify restrictions on the reference portfolio. Since the reference portfolio is an input to estimating the discount rates, changing the composition of the reference portfolio might result in the need to describe the change and the effect in the notes. That applies as well if the reference portfolio is chosen to be the assets actually held by the entity and the entity changes the composition of its assets. In paper AP02 of the September 2018 TRG, the situation of a change in the reference portfolio has been discussed for the situation that the reference portfolio is equal to the company's assets portfolio. The TRG concluded that two disclosure requirements were helpful:

- the methods used to determine discount rates and the processes for estimating the inputs to those methods, including the identification of a reference portfolio, the adjustments to the yield curve to determine the discount rates and the use of the simplification mentioned in paragraph B81 of IFRS 17; and
- the effect of a change in the composition of the assets in the reference portfolio on discount rates used to measure insurance contracts, if material.

**3.22. How could the discount curve be extended beyond available market data?**

In constructing the discount curve, a core principle is that the discount rates are consistent with observable market prices. If liability cash flows extend beyond a certain point, such discount rates may not be directly observable in the market, or market data for certain durations could be scarce. An entity may then choose to estimate appropriate rates beyond those observables in the market by interpolating between data points that are observed directly in the market, and between observable data points and rates estimated beyond the observable term structure. There are many potential approaches that can be used to derive a yield curve using interpolation and extrapolation techniques.

In Chapter V of the Discount Rate Monograph some examples of possible approaches of interpolation and extrapolation are presented.

In applying an estimation technique, as per paragraph B78, *an entity shall maximise the use of observable inputs and reflect current market conditions from the perspective of a market participant*.

**3.23. When does the observable market end?**

The determination of the end of the observable market is a function of the financial market being considered.

In general, IFRS 17 requires the use of market data when available. For example, if the market for the available financial instruments in the reference portfolio would end after 10 years and market data is available for a bottom-up approach up to 30 years, an entity using the top-down approach would adopt an approach where the illiquidity premium in the discount rates for years 10 through 30 was reasonable in light of the observable risk-free rates in years 10 through 30.

Once the relevant financial market of interest has been determined, the longest duration is determined at which the market data is both available and relevant. Market data for longer durations can be used if market prices are available. The following criteria might be looked at to perform this assessment:

- availability of financial instruments;
- bid-offer spread;
- trade frequency; and
- trade volume.

For example, in a given market, 1, 3, 5, 7, 10, 20 and 30-year instruments may be available and 50-year instruments may infrequently be traded. In this example, since the 50-year instrument is infrequently traded, data at the 50-year point would have less relevance for construction of the curve. The core premise in determining the end of the observable market is determining the last point at which "available and relevant" market data exist for construction of the yield curve, consistent with paragraph B78.[19]

If a reference portfolio is used in setting discount rates, it may be difficult to split the spread on the reference portfolio assets between a credit spread and an illiquidity premium. This may be especially challenging for longer durations. In those situations, estimation techniques might be used for this split.

**3.24. Which assumptions can be made for long durations where there is not enough market observable data?**

The following two approaches are often used:

- Continuation of the last observable rate; and
- extrapolation of the last observable rate to an ultimate rate.

Extrapolation that continues the last observable rate as a constant has the advantage of simplicity and is based on the last observable information. On the other hand, extrapolating to an ultimate rate might have the advantage of including additional market inputs and may be considered more consistent with paragraph B82(c) (i.e., more weight on long-term estimates than on short term fluctuations). Setting an ultimate rate is discussed in question 3.25.

[19] In other frameworks, such as Solvency II, a similar concept is referred to as the "last liquid point" however IFRS 17 guidance does not contain this phrase.

The rates to be used and derived can either be expressed as forward rates or as spot rates. The use of one form or the other requires some expert judgement and each can be translated back to the other form. Forward rates are frequently used to represent future implicit market rate expectations. Spot rates are generally used to derive today's market price of a future cash flow. The final assumed curve may be expressed in both forms to ensure it is balanced with implied market expectations (e.g., it may be desirable to avoid jumps and / or cliffs). One of the criteria commonly adopted by finance practitioners and academics for judging yield curve construction is that forward rates are continuous. Reasons for this include that discontinuity in forward rates implies either implausible expectations about future short-term interest rates, or implausible expectations about holding period returns (McCulloch and Kochin [2000], J. Huston McCulloch and Levis A. Kochin).

In any extrapolation technique, the level and position of the end points are required. As such, the time-horizon at which the ultimate rate is achieved needs to be set, and would depend on considerations related to how the ultimate rate was derived. It is interesting to note that if the same assumption is used, an ultimate spot rate would require a much longer convergence period than an ultimate forward rate in order to produce equivalent results.

**3.25. How is the ultimate rate level set?**

In the process of setting the ultimate rate, both prospective and retrospective approaches might be considered. According to paragraph B44 "*Estimates of market variables shall be consistent with observable market prices at the measurement date. An entity shall maximise the use of observable inputs and shall not substitute its own estimates for observable market data*". Further, the information used in the estimation would need to be appropriate for the expectations for the long durations of the ultimate rate. Technically, we can split the ultimate assumption in two: the ultimate risk-free rate and the ultimate illiquidity premium. For long durations the illiquidity premium is difficult to measure, but on the other hand it seems reasonable that market participants would require an illiquidity premium for long durations.

A very simple prospective approach would be to use the forward rate or spot rate at the last liquid point/to the end of the observable period. Another approach might be to make use of well-known economic metrics reflecting market participant expectations. Examples of useful metrics to estimate the ultimate risk-free rate are the central bank inflation target or neutral rates[20] and OECD GDP growth forecasts.

On the other hand, a retrospective approach has the advantage of simplicity. However, macroeconomic fundamentals may have changed over time and history may not repeat in the future as macroeconomic factors have evolved. Furthermore, the choice of the starting point could be considered to be arbitrary. The observable period may be chosen

[20] The neutral (or natural) rate of interest is the rate at which real GDP is growing at its trend rate, and inflation is stable. It is attributed to Swedish economist Knut Wicksell, and forms an important part of the Austrian theory of the business cycle.

to be long enough to eliminate or significantly reduce cyclic effects, but be short enough to reflect recent trends and adjust to current economic environment. Examples of retrospective approaches include using an arithmetic mean (with assumed underlying normal distribution) or a geometric mean (with assumed underlying lognormal distribution) of the historical nominal interest rate or real-rate.

One might also want to use historical observations and adjust them to obtain a realistic rate in a prospective approach. Economists have studied the decrease of the real interest rates around the world over the past decades e.g., (Rachel, 2015). Depending to which extent the economy of a country or currency is open, global developments influence the local interest rates. Some argue that there is a global long term real risk-free rate and that differences in the nominal rates are only caused by differences in the targeted inflation rate of the central banks. Others point to differences in the long-term rates between currencies that are difficult to explain. The decline in the real rate is a global trend however. Understanding this trend may help in setting prospective assumptions. Rachel (2015) identifies possible causes of the decline in the long-term rate. Some of them may revert and cause the real rate to increase, while others are unlikely to revert.

Due to increasing globalisation, real rates across groups of countries with similar economic environments have the tendency to be closer together. See also question 3.4. As such, for these countries the same ultimate real rate may be used for liabilities with similar liquidity characteristics. The nominal rates would be corrected for inflation, which might be the inflation targeted by the central bank.

For major economies, the ultimate level influences only cash flows a number of decades in the future. This suggests that care is needed in applying relatively recent history, given the length of time available for this to unwind/revert.

### Cash flows that vary based on the returns of any underlying items

**3.26. Why is it important to distinguish between the nature of the dependency between cash flows and underlying items?**

Cash flows may depend on the returns on underlying items[21]. Questions 3.26 to 3.32 discuss how the discount rate reflects the variability. It is important to distinguish between a linear and a non-linear dependence. A non-linear dependence can be, for example, caused by a combination of dependence of the cash flows on the returns of underlying items and a guarantee on the return of those underlying items. The approach to be used in the situation of linear dependence is discussed in question 3.27 and the approach to be used in the situation of non-linear dependence is discussed in question 3.28.

[21] IAA Monograph: Stochastic Modeling Theory and Reality from an Actuarial Perspective (2010).

**3.27. How are cash flows, that do vary based on the returns of any underlying items, discounted?**

Paragraph B74 (b) provides guidance for cash flows that vary based on the returns on any underlying items. These cash flows shall be:

(i) discounted using rates that reflect that variability; or

(ii) adjusted for the effect of that variability and discounted at a rate that reflects the adjustment made.

For linear dependence, this means that projection assumptions should be consistent with discounting to ensure an appropriate approach whether deterministic or stochastic methods are used. Deterministic methods are possible where there is linear dependence, i.e., where cash flows that vary based on the returns on any underlying items are not subject to embedded options or guarantees.

Under (i), cash flows are projected based on the expected returns of the underlying items. This should be performed as per the second bullet in question 3.28.

Under (ii), cash flows are adjusted for the effect of that variability. Again, if the dependence is linear, one might project cash flows using investment returns implied by a deterministic risk-free rate (or curve). In that case, the discount rate (or curve) to be used shall also be on a risk-free basis.

Both approaches avoid any omission or double counting, since the discount rate is consistent with the rate used for the cash flow projection. Theoretically, both approaches are expected to lead to the same result.

Replicating portfolio techniques (paragraphs B46 and B47) can also be useful to reflect linear dependence. These are discussed in question 3.30.

**3.28. What approaches can be used if the dependence of the cash flows on the underlying items is non-linear?**

As discussed in paragraph B76, cash flows could vary with returns on underlying items, but be subject to a guarantee of a minimum return. These cash flows do not vary solely based on the returns on the underlying items, because there might be some scenarios where the cash flow will not vary based on the underlying items, e.g., when the guarantees are in-the-money. This is an example of a non-linear dependence.

Here is a non-exhaustive list of approaches that might be used if the dependence of the cash flows on the underlying items is non-linear, noting the requirement for the measurement to be consistent with observable market prices (paragraph B48). In principle, with proper calibration, results of the different approaches listed below are expected to be comparable since they are all expected to be market-consistent:

- Stochastic modelling techniques based on risk neutral scenarios for investment returns on underlying items[22]. In this technique, the projected average investment returns on the underlying items are calibrated to be equal to the deterministic risk-free discount rate (with adjustment for illiquidity as appropriate). In each scenario, the net present value is calculated (using discount rates with adjustment for illiquidity as appropriate). The value of the cash flows of the insurance contract is equal to the average of the net present values of all scenarios.
- Stochastic modelling techniques based on real world scenarios for investment returns on underlying items. The underlying items are projected on a stochastic real-world basis. The discounting is done in a manner that reflects the market-consistent price of guarantees. One example to reflect it would be to use a stochastic real-world deflator set. (See IAA Monograph on Stochastic Modeling.) Also, in this approach, the net present value is calculated for each scenario. The value of the cash flows of the insurance contract is equal to the average of the net present values of all scenarios.
- Replicating portfolio techniques (paragraphs B46 and B47). These are discussed in question 3.30.
- A closed form (analytic) solution might also be used where this exists depending on the nature of non-linear dependence. This approach is attractive for operational/ speed/labour reasons where materiality considerations permit

**3.29. When do cash flows need to be disaggregated?**

Paragraph B77 states that an entity is not required to divide estimated cash flows into those that vary based on the returns on underlying items and those that do not. If it does not, it shall apply discount rates appropriate for the estimated cash flows as a whole; for example, using stochastic techniques.

In some cases, it might be easier to disaggregate cash flows than to apply discount rates appropriate for the estimated cash flows as a whole. One example might be a life insurance contract that provides a fixed death benefit plus the amount of an account balance if the insured person dies, and the account balance if the contract is cancelled. In this case, dividing the cash flows and applying different approaches might be practical for cash flows that vary (linearly) based on the returns on underlying items vs those that do not.

In some other cases, it might be easier using stochastic techniques than trying to divide the cash flows.

**3.30. How can replicating portfolios be used?**

Paragraph B46 states that "*an important application of market variables is the notion of a replicating asset or a replicating portfolio of assets. A replicating asset is one whose cash*

[22] As stated before, one must be careful in distinguishing cash flows that do and do not vary based on the returns on any financial underlying items .

*flows exactly match, in all scenarios, the contractual cash flows of a group of insurance contracts in amount, timing and uncertainty. […] If a replicating portfolio exists for some of the cash flows that arise from a group of insurance contracts, the entity can use the fair value of those assets to measure the relevant fulfilment cash flows instead of explicitly estimating the cash flows and discount rate*."

It might not be possible to find a replicating asset that exactly matches the insurance contract cash flows in all scenarios. Even for isolated cash flows, an exact matching may not be possible. Accordingly, it might be hard to apply paragraph B46 in practice.

Nonetheless, replicating portfolios may exist to some extent for some of the cash flows that arise from insurance contracts. One may also strive to find a portfolio of assets that will reproduce some characteristics of the insurance contracts. As per paragraph B48, "*judgement is required to determine the technique that best meets the objective of consistency with observable market variables in specific circumstances*". As per paragraph B78(c), "*in applying an estimation technique, an entity shall exercise judgement to assess the degree of similarity between the features of the insurance contracts being measured and the features of the instrument for which observable market prices are available and adjust those prices to reflect the differences between them*". The general process might start with the simplest method and progress to the use of more involved methods as necessary.

For example, such techniques might include the following assessments of insurance contract cash flows while maintaining non-financial risk assumptions at expected values:

i. **Asset cash flow matching**: Insurance contract cash flows are replicated in terms of amount and timing with available asset cash flows. This method is similar to building a reference portfolio.

ii. **Optimisation**: Assets are chosen to match, as closely as possible, the key financial risk metrics related to these cash flows (e.g., duration matching).

iii. **Dynamic replication**: Stochastic valuation techniques are used to derive risk-factor sensitivities for the insurance contract cash flows that can be replicated directly. These liability sensitivities are collectively referred to as the liability 'greeks'. Assets are identified (e.g., futures, swaps, options, …) to construct the replicating portfolio by matching the corresponding asset/liability 'greeks'.

The choice of method depends primarily upon the nature and complexity of the asset or liability under consideration and the purpose of the replicating strategy. For example, if the asset or liability is relatively simple, it might be possible to identify a pure replicating portfolio (e.g., capital guaranteed equity product and a vanilla European equity option). However, for more complex assets or liabilities, such corresponding assets may not exist, even theoretically. In this case, optimization techniques might be used to match the financial risk metrics as close as possible (e.g., path-dependent guarantees proxied using a portfolio of vanilla and exotic options). In other complex cases, optimization techniques may deliver poor results, hence the need to make use of dynamic replication techniques.

**3.31. How is the discount rate adjusted for illiquidity if cash flows do vary based on the returns on underlying items?**

The response to questions 3.15 to 3.18 explain the assessment of contract liquidity and the resulting application of liquidity premiums in discount rates.

Cash flows that accrue to the holder of an insurance contract may depend on a combination of the return on underlying items, a guarantee on the return of the underlying items and other insurance cash flows subject to non-financial risk. All the following elements contribute, depending on their significance in the value of the cash flows, to the overall illiquidity:

- the illiquidity premium from the financial underlying items;
- the guarantee on the return on the underlying items; and
- other insurance cash flows subject to non-financial risk.

For a traditional product with a guaranteed interest rate, the illiquidity would typically depend on the surrender penalty. If the return on the underlying item for profit sharing would include an illiquidity premium, the discount rate would also have to include this illiquidity premium.

The requirement for consistency with observable market prices (paragraph B48) implies that any liquidity premium adjustments made in the valuation of options and guarantees would need to be followed by a consideration of the calibration of stochastic models to ensure that market consistency is maintained.

The risk adjustment reflects the uncertainty of non-financial risk and is distinct from the present value of future cash flows, which includes provision for financial risk.

**3.32. How are future cash flows adjusted for financial risk?**

The market variables that need calibration include the level of interest rates (the yield curve), the volatility of interest rates, and the market price of risk. Either real-world or risk-neutral techniques can be used for the calibration. Real-world techniques calibrate a set of scenarios to a real world expected level, consistent with prices of financial instruments available in the market, and volatility of expected market returns directly, then make a separate adjustment for the market price of risk using deflators, the cost of capital, or other methods. Hence, if a guarantee (putting aside insurance risk) might reproduce the underlying guarantee in an insurance product, the price will be equivalent, to remain arbitrage free. Risk-neutral techniques calibrate a set of scenarios by adjusting the observed level and volatility of interest rates to reflect the market price of risk based on market prices of derivatives. When using risk-neutral scenarios, no separate adjustment for the market price of risk is required because it is implicit in calibration of the scenarios themselves and in the cash flows generated based on the scenarios.

## Premium Allocation Approach (PAA)

**3.33. Under which circumstances is discounting required for a group of contracts subject to the PAA in measuring the liability for remaining coverage?**

If the entity uses the PAA for a group of insurance contracts, as per paragraphs 53-59, discounting is only required in special circumstances in the liability for remaining coverage:

- For a group of contracts with a significant financing component where the PAA is applied, unless, at initial recognition, the entity expects that the time between providing each part of the coverage and the related premium due date is no more than a year (paragraph 56); and
- For contracts that have become onerous (paragraph 57), unless time value of money for the liability for incurred claims is not considered under paragraph 59.

If the duration of a contract is longer than a year, one would need evidence that the financing component in the liability for remaining coverage is not significant. One approach would be to always take into account a discount rate if the duration is longer than one year.

**3.34. When required, which discount rates are used for the liability for remaining coverage for contracts that have a significant financing component within a group of contracts where the PAA is applied?**

For the liability for remaining coverage of contracts with a significant financing component within a group of contracts where discounting is applied, as stated in paragraph 56, the discount rates are the locked-in rates at initial recognition of the group of insurance contracts (paragraph B72(d)).

**3.35. When required, which discount rates are used for onerous contracts where the PAA is applied?**

If the group of insurance contracts becomes onerous (as per paragraph 57 (b)), the difference between the carrying amount of the liability for remaining coverage using PAA (paragraph 55) and the fulfilment cash flows that relate to remaining coverage of the group (applying paragraphs 33-37 and paragraphs B36-B92) should be calculated. The calculation of fulfilment cash flows uses either the current rate or not discounted at all if the liability for incurred claims is not discounted (as per paragraph 59 (b)).

**3.36. When required, which discount rates are used for the liability for incurred claims?**

For incurred claims, discount rates are used unless cash flows are expected to be paid or received in one year or less from the date the claims are incurred, and the PAA is applied. The calculation of liability values uses the current rate for the balance sheet. For the P&L, the locked-in rate is used if the OCI option is applied. Otherwise, the current rate is also used for the P&L. When PAA is applied, the locked-in rate is as at the date the claim was incurred. If the GMA is applied, the locked in rate as at the date of the initial recognition of the group insurance contracts.

## Locked-in rates

**3.37. What interest rates are used to accrete the CSM?**

For contracts without direct participation features, the interest rate accreted on the CSM is based on the discount rates as applied at initial recognition of the group for cash flows that do not vary based on returns on underlying items (paragraph B72(b)). It is not adjusted to reflect the variability of the cash flows (paragraph B74(bi)). It may include an illiquidity premium. This is referred to as the locked-in curve.

IFRS 17 is not specific regarding the method to roll forward the curve. One approach might be to derive each year's discount factors with the forward rate for that year, from the locked-in curve. This forward rate would be the rate to accrete on the CSM. Another possibility is to use the effective rate if derived at the inception although it is quite dependent on cash flow pattern.

If there are direct participation features, the change in the entity's share of the fair value of underlying items adjusts the CSM, which is effectively the same as accreting interest on the CSM at current rates (paragraph B112).

**3.38. What discount rate is used to measure adjustments that adjust the CSM?**

It is the discount rates determined at initial contract recognition for cash flows that do not vary based on the return of underlying items. For contracts without direct participation features in the contract, the discount rate used to measure changes that adjust the CSM is the same as the discount rate described in question 3.37.

For contracts with direct participation features, changes are measured using the current rate.

**3.39. What is the locked-in yield curve when the OCI option is used for groups of insurance contracts for which changes in assumptions that relate to financial risk do not have a substantial effect on the amounts paid to policyholders?**

For groups of insurance contracts for which changes in assumptions that relate to financial risk *do not* have a substantial effect on the amounts paid to policyholders, and the OCI option is used, the change in the present value of the cash flows presented in the P&L is based on the locked-in curve. That means that the discount rates are determined on the yield curve at the date of initial recognition of the group of contracts (or the date claims are incurred for the PAA (paragraphs B72 (e)(iii))), applying paragraph 36 to cash flows that do not vary based on the returns on any underlying items.

**3.40. How is the OCI option applied for groups of insurance contracts for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to policyholders?**

These contracts have participation features, but fail to meet the definition of "insurance contracts with direct participation features" or these contracts meet the definition but the entity doesn't hold the underlying items. If the entity chooses to recognise insurance finance income or expenses in OCI, rates are used that allocate the remaining revised

expected finance income or expenses over the remaining duration of the group of contracts at a constant rate or expected credited rate[23]. (Paragraphs 88(b) and B132).

**3.41. How is the OCI option applied for groups of insurance contracts with direct participation features?**

Amounts in profit or loss would exactly match those related to the underlying items (paragraph B134).

**3.42. Which discount rate is used for the amortization of the loss component?**

After an entity has recognised a loss on an onerous group of contracts it shall, as per paragraph 50(a) allocate the subsequent changes in fulfilment cash flows of the liability for remaining coverage specified in paragraph 51 on a systematic basis between:

i. The loss component of the liability for remaining coverage; and

ii. The liability for remaining coverage, excluding the loss component.

The amortisation of the loss component can be linked to the present value of a part of the fulfilment cash flows (e.g., cash outflows). With respect to the discount rate used for the amortisation IFRS17 does not provide guidance. This discount rate might be chosen equal to the locked in rate at inception. It might also be a locked in rate at the moment that the group of insurance contracts becomes onerous. See question 6.29.

**3.43. Can a single equivalent discount rate be used instead of the locked-in discount curve?**

See question 3.10 for introductory context.

The locked-in curve is determined at initial recognition and if it were to be translated into a locked-in constant rate the pattern of cash flows at initial recognition would presumably be used in the derivation. Potential challenges that may occur in the subsequent use of this locked in rate are as follows:

- One purpose of the locked-in discount curve is to measure the changes that adjust the CSM for insurance contracts without direct participation features. An adjustment to the CSM would only arise if the pattern/level of cash flows was altered. Since the locked-in constant rate at inception would be derived based on the pattern of cash flows at inception, application of this rate to an altered pattern of cash flows may be inappropriate. To gauge the materiality a comparison of the originally derived locked-in rate and the revised locked in constant rate based on the new pattern of cash flows may be required.
- Another purpose of the locked-in discount curve is to accrete interest on the CSM. Given this different purpose, the use of the locked in constant rate based on the pattern of liability cash flows may be inappropriate for interest accretion. Rather a locked-in discount rate based on equating the expected CSM interest accretion may be more relevant. Further challenges similar to the above may be encountered

[23] See also example 15 of the Illustrative Examples.

when the pattern/level of liability cash flows changes, changing the CSM and potentially the effective locked-in discount rate.

The standard does not provide guidance on the potential use of a single locked in effective rate. Judgement is left for preparers of the standard.

**3.44. How is the discount rate at inception used in the subsequent measurement?**

The future discount curve may be derived from those forward rates at inception which are still in future at the measurement date.

**3.45. Is the locked in rate always a nominal rate?**

According to paragraph B74 "*estimates of discount rates shall be consistent with other estimates used to measure insurance contracts to avoid double counting or omissions*" and "*real cash flows (i.e., those that exclude the effect of inflation) shall be discounted at rates that exclude the effect of inflation*". See question 3.5. Although the standard does not specifically address this, it implies that if real rates are used, finance expenses are on a real basis as well.

**3.46. How is the locked-in curve determined for a group of contracts and how does it impact interim vs annual reporting periods?**

The discount rate for the calculation of the CSM at issue for contracts in a group could be determined in, amongst others, any of the following ways.

a. Calculating the CSM at issue for each contract within the group using the discount curve at each contract's respective issue date.

b. Calculating the CSM at issue for the group of contracts as at the date of initial recognition using the discount curve as at the date of initial recognition. This is thought to be consistent with IFRS17 as it refers to the date of initial recognition for the group and not the date of initial recognition of individual contracts. See paragraph 25 for the definition of the date of initial recognition of a group.

c. Calculating the CSM at issue for each contract using a weighted average discount curve (paragraph B73). To apply this approach suitable weights would need to be defined as they are not specified in the guidance.

The methodology for determining the locked-in curve across one or more reporting periods might be driven by the option chosen above. As per paragraph B73 a weighted average discount curve might be created. The locked-in curve could be a weighted average curve of the specific curves used (i.e., the curves to be weighted would be from the actual issue dates). The weighting could be done, for example, by considering the coverage units.

The objective of the weighted average curve is to find one curve that provides the same value as a different curve for each contract. If this would not be the case profits may arise when new policies are sold due to simplifications constructing the curve for the group. The usability of the alternative depends on the quality of the simplification / weighting process. A simple approach might be to average discount factors and derive a curve from

these factors. An alternative would be averaging spot rates. The latter method however is less likely to provide a present value equal to the present value based on the curves at the date of initial recognition of the contracts. A pragmatic approach might be reasonable because perfect weights can only be determined with several iterations. For stochastic modelling this is even more difficult.

In recognising a group of insurance contracts in a reporting period, an entity will include contracts issued by the end of the reporting period and will make estimates for the discount rates using, for example, a weighted average. The entity may issue more contracts in the group after the end of a reporting period (subject to paragraph 22), by adding the contracts to the group in the reporting period in which the contracts are issued. This may result in a different weighted average discount rates to the date of initial recognition. As per paragraph 28, the entity shall apply the revised weighted rates from the start of the reporting period in which the new contracts are added to the group. Consistent with paragraph B137, the entity does not need to change the treatment of accounting estimates made in previous interim financial statements when applying IFRS 17 in subsequent interim financial statements.

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## Chapter 4 – Risk Adjustments for Non-Financial Risks

Before consulting this chapter, be sure to read the introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

### 4.A. What does this chapter address?

This chapter considers the criteria and measurement of the risk adjustment for non-financial risk required under IFRS 17 including the purpose and general requirements of the risk adjustment, what risks would typically be covered, and specific considerations in determining the risk adjustment. This note discusses how to reflect risk mitigation (such as diversification and risk sharing), catastrophic and other infrequent events, qualitative risks considerations, use of different approaches by line of business, and general considerations in selecting and calibrating a risk adjustment approach. For detailed risk adjustment methods and how to apply them, reference is made to the IAA Monograph Risk Adjustments for Insurance Contracts Under IFRS 17. This chapter also covers high level disclosure requirements, including confidence level disclosure, and issues around allocation of risk adjustments to a lower level.

In this chapter, the term "risk adjustment" refers to the "risk adjustment for non-financial risk", as defined in IFRS 17. In other frameworks or other documents, the term risk margins are used with many similarities, but some significant differences, to the IFRS 17 risk adjustment. The definitions and uses of the term "risk margin" are different in many references than how the term risk adjustments is defined and used within IRFS 17.

### 4.B. Which sections of IFRS 17 address this topic?

Paragraphs 37, 81, 101, 117–119 and paragraphs B86–B92 provide guidance on this topic.

Paragraphs BC206–BC217 also provide background on the subject.

### 4.C. What other IAA documents are relevant to this topic?

To support the selection of an approach or approaches for estimating the risk adjustment, an educational IAA Monograph *Risk Adjustments for Insurance Contracts Under IFRS 17* was produced. The main intention of the Monograph is to provide focus on methodologies and approaches, to document and build on common approaches that have been developed as of the date of the monograph, and to explore ways in which IFRS 17's entity-specific approach may be incorporated into these approaches.

### 4.1. What is a risk adjustment?

Under IFRS 17, insurance contract liabilities are measured as defined in paragraph 32:

"*On initial recognition, an entity shall measure a group of insurance contracts at the total of:*

*(a) the fulfilment cash flows, which comprise:*

*(i) estimates of future cash flows (paragraph 33–35);*

*(ii) an adjustment to reflect the time value of money and the financial risks related to the future cash flows, to the extent that the financial risks are not included in the estimates of the future cash flows (paragraph 36); and*

*(iii) a risk adjustment for non-financial risk (paragraph 37).*

*(b) the contractual service margin, measured applying paragraph 38–39*."

The "risk adjustment for non-financial risk" is defined in Appendix A of IFRS 17 as: "*The compensation an entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk as the entity fulfils insurance contracts.*" A similar definition is also included in paragraph 37.

This chapter primarily discusses the risk adjustment for non-financial risk associated with the insurance contracts issued by the entity. The risk adjustment for ceded reinsurance (referred to as reinsurance held in IFRS 17) is governed by paragraph 64. The application of risk adjustments for ceded reinsurance is discussed in Chapter 9 – Reinsurance.

### 4.2. What is the purpose of the risk adjustment in IFRS 17?

Paragraph B87 states:

*The risk adjustment for non-financial risk for insurance contracts measures the compensation that the entity would require to make the entity indifferent between:*

*(a) fulfilling a liability that has a range of possible outcomes arising from non-financial risk; and*

*(b) fulfilling a liability that will generate fixed cash flows with the same expected present value as the insurance contracts*.

As such, the risk adjustment measures the value of a liability related to the inherent uncertainty in the estimates of the timing and amount of cash flows associated with that liability. As IFRS 17 provides only the principles governing how this risk adjustment value should be determined, it will be important to those who determine and rely on such risk adjustment values that the quantification of such a risk adjustment liability value be based on methodologies and/or approaches that are robust (e.g., effective, tested and/or validated, where possible) and fairly reflect the IFRS 17 principles for estimating this risk adjustment value.

As most users only see what is published in the entity's financial statements, these risk adjustment liability values and changes in such risk adjustment values will reflect the entity's understanding of the basis on which its risk adjustment is determined and any changes in that basis. This understanding will underlie the entity's ability to provide appropriate disclosures as required by IFRS 17. The entity's understanding will enhance its communications, enable consistency to be recognised, and allow relevant comparisons to be made, as appropriate.

An important aspect of the communications among those responsible for determining an entity's risk adjustment is the explanation and insight regarding how the entity's views with respect to the compensation it requires for bearing risk and uncertainty have been

incorporated in the determination of the risk adjustment. Such communications will be expected to reflect a thorough understanding of the entity's views on risk aversion, risk diversification, and the uncertainty surrounding the cash flows being estimated.

### 4.3. What are the IFRS 17 requirements for risk adjustment?

In contrast to some financial reporting practices used previously to IFRS 17 or for non-IFRS 17 purposes, IFRS 17 requires that the entity determines an explicit risk adjustment. An implicit allowance, such as through loaded assumptions, does not satisfy this requirement.

IFRS 17 does not provide guidance on appropriate techniques and methods to set the risk adjustment. In paragraph 37, it requires that:

"*An entity shall adjust the estimate of the present value of the future cash flows to reflect the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk.*"

The application guidance states, in paragraph B91, that a risk adjustment should possess the following five characteristics:

*(a)* "*risks with low frequency and high severity will result in higher risk adjustments for non-financial risk than risks with high frequency and low severity;*

*(b)* *for similar risks, contracts with a longer duration will result in higher risk adjustments for non-financial risk than contracts with a shorter duration;*

*(c)* *risks with a wider probability distribution will result in higher risk adjustments for non-financial risk than risks with a narrower distribution;*

*(d)* *the less that is known about the current estimate and its trend, the higher will be the risk adjustment for non-financial risk; and*

(e) *to the extent that emerging experience reduces uncertainty, about the amount and timing of cash flows, risk adjustments for non-financial risk will decrease and vice versa.*"

It should be noted that the risk adjustment relates only to non-financial risks inherent in the insurance contract and its cash flows. Paragraph B86 states:

> "*The risk adjustment for non-financial risk relates to risk arising from insurance contracts other than financial risk. Financial risk is included in the estimates of the future cash flows or the discount rate used to adjust the cash flows. The risks covered by the risk adjustment for non-financial risk are insurance risk and other non-financial risks such as lapse risk and expense risk (see paragraph B14).*"

Financial risks are excluded. Also excluded are other risks that do not arise directly from the insurance contracts, such as asset-liability mismatch risk or general operational risks (see question 4.7 for a fuller discussion of which non-financial risks are considered).

This general guidance means that there is no single correct way for an entity to set the risk adjustment. In general, some of the important considerations that will be relevant to

how an entity determines its approach to estimating the risk adjustment will include, but are not limited to:

- consistency with how the insurer assesses risk from a fulfilment perspective;
- practicality of implementation and ongoing re-measurement; and
- translation of risk adjustment for disclosure of an equivalent confidence level measure.

Therefore, a variety of methods are potentially available, although the ultimate choice depends on the extent to which the choice of method(s) conforms with the requirements of paragraph 37 and the five characteristics in paragraph B91, given the specific circumstances of the entity. Potential methods include, but are not limited to, quantile techniques, such as the confidence level or Conditional Tail Expectation ("CTE"), or cost of capital techniques. The choice may also be influenced by the entity's risk management policies and practices.

Risk adjustments are measured on a pre-tax basis.

There are also disclosure requirements related to the risk adjustment (see question 4.15 and Section E – Presentation and Disclosure).

**4.4. What does "risk" mean in this chapter?**

The word "risk" can have a variety of meanings, in the context of insurance.

- It can mean the two-sided risk that an outcome be greater or less than the estimated expected value of that outcome as a result of variability and uncertainty. This is the intended meaning of risk in this chapter. The terms "variability" and "uncertainty" are also used in the discussion of risk in this chapter.
- It can mean the one-sided risk that an outcome will be worse than its expected value.
- It can refer to the subject of the insurance.
- It can refer to the insured events.

In this chapter, variability refers to the statistical variation inherent in the insurance process, which leads to uncertainty in the expected future cash flows. Risk is amenable to statistical analysis of experience data. Given sufficient data, risk can be quantified in terms of the variance and higher moments of a suitable probability distribution.

The concept of uncertainty is used in this chapter to depict a concept of risk that is broader than statistical variability. Some common aspects of uncertainty include:

- Uncertainty in the estimates of the mean, variance, and higher moments of a probability distribution. This uncertainty may be quantifiable as part of the statistical analysis if sufficient data are available.

- Uncertainty in the choice of probability distribution. Complex insurance processes seldom conform exactly to standard probability distributions. It may only be possible to partially quantify this uncertainty by considering alternate distributions.
- Uncertainty in the experience data that arises when the data contain more or fewer extreme events than normal. The selection of a suitable probability distribution may assist in quantifying this uncertainty.
- Uncertainty when future circumstances vary from the past. Changes in the environment, technology, and society at large are all reasons why distributions based on past experience may need to be interpreted cautiously as guides to the future. Appropriate adjustments from past to future experience are a matter of judgment and can introduce uncertainty into the future cash flows.

Chapter 2 of the IAA Monograph Risk Adjustment for Insurance Contracts Under IFRS 17 provides expanded discussions on the background and concepts for risk adjustments included in the IFRS 17 principles-based framework.

How to appropriately reflect these sources of uncertainty in the risk adjustment depends on the extent of the data and on the materiality of the potential impact on the result from the viewpoint of the reporting entity. In some cases, it may be appropriate to analyse the details extensively. Alternatively, it may be appropriate to undertake more limited analysis and to reflect other aspects of uncertainty based partly or wholly on judgement. Where data are limited, it may be necessary to rely very heavily on judgement. In assessing the extent of analysis that is appropriate, judgement is needed as to the balance between the effort involved in undertaking deeper analysis versus whether the deeper analysis will result in a change in the estimates used to reflect risk and uncertainty that is both material and statistically meaningful.

### 4.5. What risks should be considered?

As discussed in question 4.3, paragraph B86 requires risk to be split between financial and non-financial risk and considered separately.

Paragraph B89 states that:

*"The purpose of the risk adjustment for non-financial risk is to measure the effect of uncertainty in the cash flows that arise from insurance contracts, other than uncertainty arising from financial risk. Consequently, the risk adjustment for non-financial risk shall reflect all non-financial risks associated with the insurance contracts. It shall not reflect the risks that do not arise from the insurance contracts, such as general operational risk*."

Furthermore, financial risk is defined in Appendix A as:

"*The risk of a possible change in one or more of a specified interest rate, financial instrument price, commodity price, currency exchange rate, index of prices or rates, credit rating or credit index or other variable, provided in the case of a non-financial variable that the variable is not specific to a party to the contract."*

Under these definitions, the risk adjustment for non-financial risk would include the uncertainty created by the following risks to estimates of the future cash flows. Note that this list may not be exhaustive.

- Claim occurrence, amount, timing, and development;
- Lapse, surrender, premium persistency, loan activity, and other policyholder actions;
- Expense risk associated with costs of servicing the contract;
- External developments and trends to the extent that they affect policyholder actions or insurance cash flows.
- Claim and expense inflation risk other than financial risk.

For the risk adjustment associated with reinsurance held, see Chapter 9 – Reinsurance.

The risk adjustment for non-financial risk would not include the uncertainty created by the following:

- Operational risk to the extent that it is not driven by the future cash flow items above. Examples, depending on circumstances, could include legislative risk, reputational risk, business interruption/the risk of cyber attack etc.;
- Asset-liability mismatch risk;
- Price or credit risk on underlying assets.

In some instances, as noted in paragraph B53, there may be correlations and interactions between financial variables and non-financial variables that impact expected cash flows, making the distinction between financial risk and non-financial risk less clear. For example, policyholder behaviour may be influenced by investment performance where there are linkages between investment returns and credited rates and the value of the contract. In this instance, the present value of future cash flows reflects this influence of investment performance on those cash flows dependent on future policyholder behaviour. The risk that policyholder behaviour is different from what is reflected in the present value of future cash flows could be considered non-financial risk. Another example is spread compression risk due to earned and / or credited rate differences where crediting rates are discretionary. The risk that the discretionary spread compression is different from what is reflected in the present value of future cash flows could be considered a non-financial risk if it is not considered a general operational risk excluded from future cash flows.

### 4.6. What is the role of actuarial input on the risk adjustment?

In actuarial terms, the risk adjustment is intended to reflect the value of the uncertainty inherent in the cash flows of the insurance contracts – in terms of the amount and the timing of cash flows. It is expected that actuarial input, both quantitative and qualitative, will be needed. Such input may include the actuary:

- Providing quantitative measures to help evaluate the variability inherent in the insurance contracts being valued and the uncertainty which underlies such quantitative measures;
- Assisting in understanding and assessing the entity's risk aversion (i.e., attitude toward risk) related to the uncertainty and variability of insurance cash flow (see questions 4.8 and 4.9);
- Assisting in understanding the extent to which the entity considers "the degree of diversification benefit the entity includes when determining the compensation it requires for bearing that risk" (paragraph B88(a));

  Assisting in designing an approach to assess a value in terms of the compensation for bearing risk that reflects the entity's risk aversion in the context of the relevant risks and in the context of the diversification affecting the compensation for such risks;
- providing explanations and insights to help in communicating the understandings and judgments involved, such that the entity's board and management can have the appropriate level of direction and oversight regarding how the risk adjustment is determined; and
- Assisting with the disclosure requirements (see questions 4.18, 4.20, and 4.21).

**4.7. What is the role of judgment in estimating the risk adjustment?**

Judgment may be needed for a variety of areas including, but not limited to:

- the selection of the approach to estimate the risk adjustment;
- the assessment of the entity's risk aversion;
- the estimation and assessment of variability and uncertainty, depending on the data available;
- the assessment of diversification, depending on the complexity of the business written and on the entity's approach to diversification below the holding entity level (see question 4.10); and
- the assessment of how risk aversion interacts with variability and uncertainty in the determination of the risk adjustment.

Judgements may also be needed for the assumptions and other detailed elements in each of the above areas.

In general, it will be important that the entity's board and management understand the process and the judgements used to determine the entity's risk adjustment and how their oversight and management roles and responsibilities are being satisfied.

**4.8. What is risk aversion and how does it relate to the risk adjustment?**

Risk aversion, which is related to risk appetite, is an entity's reluctance to accept risk, particularly as respects unfavourable outcomes. To overcome this aversion, entities

typically expect compensation for bearing risk. The greater the risk aversion, the greater the compensation required. While it can be taken as a general truth that the compensation required increases as risk aversion increases, the relationship is not necessarily linear. For example, the closer an additional risk brings an entity towards its risk capacity, the entity is likely to require a compensation that is greater than simply proportionally more to accept it. In other words, risk aversion generally increases as an entity approaches its risk capacity. The risk adjustment would be measured considering the entity's overall attitude to risk.

**4.9. How can the actuary assess and express an entity's risk aversion?**

The entity's risk policy may include an explicit risk aversion policy. In some cases, the actuary may be able to draw on such an explicit risk policy, such as that adopted by the entity's board, which would typically be developed in consultation with the entity's Chief Risk Officer and / or enterprise risk committee. The entity's risk policy may extend to risks (variability and uncertainty) which are excluded from the risk adjustment (such as financial risks) and risks related to contracts that are not accounted for under IFRS 17. Thus, methods would be needed to separate such risks.

When an explicit risk policy does not exist or is not applicable, discussions with the entity's board and management may be appropriate. Topics for discussion that the actuary may find useful include:

- comparison with similar entities in the market;
- discussion of stress scenarios, both short and long term;
- the entity's underwriting and pricing policy and practices;
- the entity's approach with respect to capital needs and capital management;
- the entity's approach to setting target returns; and
- the entity's reinsurance policy and practices.

Risk aversion ultimately finds its expression in the compensation that the entity requires for bearing uncertainty about the amount and timing of cash flows. See question 4.3.

**4.10. What is risk diversification, how should allowance be made for it in the risk adjustment, and what level of aggregation should be used?**

The risk adjustment reflects "*the degree of diversification benefit the entity includes when determining the compensation it requires for bearing that risk*" (paragraph (B88(a)). The degree of risk diversification and the method and detail in the method by which it is applied are to be included within the entity's assessment of compensation.

Paragraph B88(a) uses the term "diversification", suggesting a bottom-up approach to determining the required compensation but does not preclude a top-down approach. If an entity uses a top-down approach, the entity can determine the total compensation that it requires for bearing non-financial risk and then allocate or apportion it. For example, the entity may allocate its risk compensation to whatever level of subdivision is

required for financial reporting purposes. With this process, the extent of aggregation of the business risks for which the entity determines its total required compensation for bearing risk is the equivalent of the extent of aggregation of business over which diversification is reflected.

This aggregation encompasses all of the insurance contracts that the entity elects to include when considering diversification benefits in its compensation for bearing risk. For example, an entity may elect to aggregate all of the insurance contracts that it writes.

A practical issue arises when evaluating the risk adjustment for the insurance written on a gross basis (i.e., without regard to reinsurance ceded). The compensation required for bearing risk would typically first consider the risk for the entity net of reinsurance, with due consideration given to the entity's use of reinsurance held as a financial resource available to the entity. Consequently, the entity's risk aversion will implicitly reflect its views as respects its "net risk" (i.e., risk net of reinsurance). To meet the requirement in IFRS 17 to estimate the risk adjustment associated with reinsurance held, it is necessary to reflect the differences in risk on a gross basis and on a net of reinsurance basis but maintain the entity's views regarding required compensation. Paragraph 64 states that the risk adjustment "*represents the amount of risk being transferred by the holder of the group of reinsurance contracts to the issuer of those contracts.*"

In some cases, most commonly for quota share and sometimes for surplus reinsurance, the gross risk measurement might be approximately proportional to the net of reinsurance risk measurement and therefore the gross risk adjustment can be estimated by using a simple scaling factor applied to the net of reinsurance risk adjustment. In other cases, there may be quantitative and qualitative aspects of the risk and uncertainty such that the reinsurance held provides a disproportionate degree of risk mitigation. For non-proportional reinsurance (such as excess of loss), the value to the entity from the risk mitigation provided by its reinsurance held is typically significantly greater than simply proportional to a selected risk measure. In some cases, it may be appropriate to consider other benchmarks or risk measures that are consistent with the entity's risk aversion (reflecting that its risk is mitigated via reinsurance) and also to consider the entity's estimate of its costs to retain, or replace, the reinsurance held.

Where reinsurance policies cover the risks of multiple portfolios of insurance contracts, it may be necessary to take a broader view and apportion the impact of the reinsurance for reporting purposes.

If a bottom-up approach to risk adjustment is adopted, the total required compensation for uncertainty, net of the reinsurance effect, is an important check on the result of this process.

The risk adjustment may reflect the impact of diversification of non-financial risk across all of the insurance contracts that the entity selects. This may be the aggregation of all contracts to take account of all possible diversification benefits, or it may be at a lower level for sub-groups comprised of specific contracts or cohorts of business. The key

consideration in making this choice is how the entity considers diversification in establishing the compensation it requires.

In a similar vein, where insurance contracts are issued by one or more subsidiaries in a group, it is open to the reporting entity to assess the risk adjustments appropriate to contracts in each subsidiary independently of any support that the holding entity may provide or to reflect that support in its risk aversion and, hence, implicitly allow for diversification across part or all of the group. This is an accounting policy decision which could be informed by the operational arrangements within the group. Paragraphs 19-21 of paper AP02 for May 2018 meeting of the IASB's TRG described the consolidated risk adjustment as the sum of the subsidiary risk adjustments.

**4.11. What allowance should be made for large or infrequent or atypical events?**

The risk adjustment is intended to fully reflect all of the uncertainty in the amount and timing of insurance cash flows, incorporating allowance for all possible outcomes in proportion to their respective probabilities. This includes infrequent and atypical events in the tail of the distribution of outcomes. Where such tail events or combinations of events are not represented in the experience data, judgement may be needed as to how great an allowance is needed. Conversely, where such events are present, judgment may be needed as to whether they are disproportionally represented. It should be noted that the impact of such contingencies on uncertainty is typically proportionately greater, and may be much greater, than the impact on the corresponding expected value.

In some cases, it may be possible to fit a probability distribution that allows for extremes based on observed experience, but the suitability of the chosen probability distribution is both a matter of judgement and a source of uncertainty. It is often helpful to model extreme outcomes separately from other events.

**4.12. What allowance should be made for risk-sharing mechanisms other than reinsurance?**

Risk sharing mechanisms may include:

- participation;
- investment linkage;
- deductibles and excesses;
- profit sharing;
- retrospective experience rating; and
- prospective experience rating schemes such as some methods for applying no-claim discounts.

No allowance would be made for prospective experience rating that lies outside the contract boundary unless it affects the compensation the entity requires, as this does not relate to current contracts and is regarded as part of the underwriting process for future contracts.

Risk-sharing arrangements can affect the contractual cash flows between the insurer and the policyholder. Risk-sharing arrangements can reduce the risk of the cash flows. Risk adjustment reflects all of these contractual cash flows with due consideration to the contingencies involved.

**4.13. What is the compensation that the entity requires for bearing risk?**

The compensation that the entity requires for bearing risk is a matter of judgement, which is ultimately exercised by the management of the entity and governed by the board of the entity. Relevant actuarial input is important to both management and the board to exercise their responsibilities.

Judgements about compensation and risk are made regularly by entities in relation to the profit margin priced into their insurance contracts. Examples of how such profit margins are expressed can be observed in a variety of ways, such as:

- an overall required profit margin on business written;
- a target rate of return or margin over risk-free on total assets, capital, or equity;
- different profit margins on different classes of business; which may be dependent on perceived risk;
- a target probability, which may be used for solvency assessment that losses will not exceed a given percentage of net assets; and
- an analysis of the net assets and margin over risk-free return required to support the total business on a basis such as a target probability, where the assets will prove adequate and a rate of return commensurate with the risk.

The profit margin, however, can differ quite widely for different segments of an entity's business and over time. While a profit margin may be a reasonable starting point, there are usually elements of a profit margin that are not consistent with the IFRS 17 measurement objectives for risk adjustment. For example, general overheads and operational, asset-liability matching, and financial risks (other than investment risks that are directly related to cash flows to the policyholder) would typically be included in the profit margin but are not considered in the IFRS 17 risk adjustment. Further, the IFRS 17 criterion for risk adjustment is the amount which would make the entity indifferent between uncertain cash flows and fixed cash flows. Profit margins frequently reflect different objectives (such as desired market share and market competitiveness, policyholder dividend considerations, and pricing sensitivities), which are not relevant considerations for the risk adjustment.

While regulatory regimes typically prescribe risk margins and / or capital in excess of central estimates, these values are based on a regulatory rather than an entity perspective. Furthermore, these values also typically include allowances for risks that are not considered within IFRS 17.

**4.14. How should qualitative risk characteristics be reflected**

Paragraph B89 requires that "… the risk adjustment shall reflect all non-financial risks associated with the insurance contract …" and paragraph B91(d) that "the less that is known about the current estimate and its trend, the higher will be the risk adjustment …". These provisions require that allowance for qualitative risk characteristics is to be incorporated into the risk adjustment. By their nature, incorporating such factors into the assessment of the risk adjustment requires judgement.

Situations often arise where information to develop assumptions for risk, including probability models, is limited. This is most frequently the case with new markets, new risks, long duration risks, and risks involving extreme or remote events. Nevertheless, unanticipated circumstances ("unknown unknowns") can arise in almost any environment.

IFRS 17 does not specify the estimation technique(s) that an entity must use to determine the risk adjustment (paragraph B91). Thus, each entity would choose one or more techniques that appropriately reflect the available data, information, and results from the models, including the risk strategy of the management, and the extent of the uncertainty. It is important that the technique used appropriately captures the compensation for bearing the risk

Both simple and complex techniques may be appropriate, depending on the nature and significance of the uncertainty as well as the type of modelling available. For example, where uncertainty is significant and is characterised by a very low frequency and high severity risk profile, a scenario testing approach might perform better, provided suitable extreme scenarios are included. Modelling using a suitably skewed probability distribution is another approach. Where there are discontinuities and probability models are available, such a risk might be captured by introducing a state or regime switch into the model.

Qualitative risks cannot be measured directly and are seldom symmetrical. As a result, it may be appropriate to modify, based on judgement, the risk adjustment solely on the basis of knowledge of the risks involved and any observed experience that could be relevant.

Whatever approach is taken to qualitative risks, consistency over time is important. Changes in the approach used to assess qualitative risks may be warranted at times, such as when there is significant change in the perceived qualitative drivers of uncertainty.

**4.15. What disclosures and explanations are required?**

Paragraph 93 states:

"*The objective of the disclosure requirements is for an entity to disclose information in the notes that, together with the information provided in the statement of financial position, statement(s) of financial performance and statement of cash flows, gives a basis for users of financial statements to assess the effect that contracts within the scope of IFRS 17 have on the entity's financial position, financial performance and cash flows.*".

The disclosures required are set out in paragraphs 93-96. Paragraphs 97-132 set out the required "*explanation of recognised amounts*".

For the most part, these disclosures relate to amounts that are inclusive of risk adjustments and are discussed in other chapters. The specific requirements in respect of risk adjustments are in paragraphs 101, 117, and 119.

Paragraph 101 states: "*For insurance contracts other than those to which the premium allocation approach described in paragraph graphs 53–59 or 69–70 has been applied, an entity shall also disclose reconciliations from the opening to the closing balances separately for each of:: … (b) the risk adjustment for non-financial risk; …*"

Paragraph 117 states:

> "*An entity shall disclose the significant judgements, and changes in those judgements, that were made … (c)(ii)to determine the risk adjustment for non-financial risk …*"

Paragraph 119 states:

> "*An entity shall disclose the confidence level used to determine the risk adjustment for non-financial risk. If the entity uses a technique other than the confidence level technique for determining the risk adjustment for non-financial risk, it shall disclose the technique used and the confidence level corresponding to the results of that technique.*"

Where the PAA is applied, the applicable paragraphs requiring explanation of recognised amounts are paragraphs 98-100 and 102-105. Of these, risk adjustment for non-financial risk is mentioned in each of paragraphs 100 and 104.

### 4.16. What explanations and disclosures might be included in the actuary's communications?

While there is no stated requirement in IFRS 17 that the risk adjustment be determined by an actuary, the work products and input of actuaries are very likely to be relied upon to develop, review, and maintain the risk adjustment values. An important objective of the actuary's communications is to assist the entity in developing its IFRS 17 disclosures and to enable the board and management to better understand the way in which the actuary has undertaken his or her work. Key elements of these communications, relative to risk adjustments, may include a discussion on:

- the background to the disclosures required;
- how the compensation the entity requires for bearing risk was quantified;
- how the entity's risk aversion was assessed and incorporated in considering the entity's required compensation for bearing risk;
- how risk has been identified, quantified, and translated into a risk adjustment;
- how qualitative and unknown risks were allowed for, including their relative importance, within the risk adjustment;

- how risk diversification was considered, within and across risk types and product lines, geographic divisions, across entities within a group, etc.; and
- the impact of reinsurance and other risk transfer or mitigation considerations (see Chapter 9 – Reinsurance).

**4.17. What are appropriate methods to allocate risk adjustments calculated at a more aggregated level to a more granular level?**

IFRS 17 does not require the risk adjustment to be directly determined at any specific level of granularity. However, to obtain appropriate fulfillment cash flows for each group of insurance contracts ("group"), the risk adjustment needs to be allocated at least to the group level for various purposes (e.g., CSM and liability for onerous contracts).

If the risk adjustment is initially calculated at a more aggregated level, any reasonable method that will lead to the same total risk adjustment were the risk adjustment directly determined at the lower level of aggregation is appropriate to more finely allocate the risk adjustment. For example, if the risk adjustment reflects components separately determined for insurance risk, policyholder behavior risk, and expense risk, the allocation methodology could use risk drivers that appropriately attribute the impact of each of these risks to the lower levels of aggregation.

In some cases, the entity may choose to initially calculate the risk adjustment at a level that incorporates some groups valued under the general measurement approach and others where the liability for remaining coverage is determined under the PAA, i.e., there is no risk adjustment for the PAA liability for remaining coverage. In such cases, there will still be a portion of the risk adjustment attributable to the present value of the future cash flows from unpaid claim liability associated with the PAA groups.

Consideration could also be given to running more complex models at a higher level of aggregation (and perhaps less frequently) and then simplified into factor matrices to use at a more granular level in the valuation.

**4.18. What are appropriate ways to estimate confidence levels for disclosure when not directly available from the risk adjustment calculations?**

In order to determine confidence levels, only a portion of the probability distribution would be needed. If that probability distribution is not explicitly derived as part of the measurement process, some method or model might be needed to estimate the percentiles of that combined portfolio distribution of the fulfilment cash flows at the amount which includes the risk adjustment. The extent of the analysis needed for such estimation is likely to require judgement.

For large collections of insurance contracts, the shape of the probability distribution may be assumed based on knowledge about the characteristics of the fulfilment cash flow risks. In other situations, the form of the probability distribution might be selected based on judgement, and the parameters for that probability distribution might be selected judgementally based on what is considered appropriate for the purpose of the IFRS 17 disclosure.

Note that the sensitivity of the resulting confidence level to the chosen probability distribution increases as the confidence level increases.

The relevant part of the probability distribution may be defined in terms of two or more quantiles that straddle the fulfillment cash flows based on evidence and judgements which would explain the values chosen for those quantiles.

**4.19. What other considerations are relevant when estimating and communicating confidence levels?**

External users are likely to place significant importance on the confidence level disclosure and compare entities to their peers. As a result, the confidence level is an area where the actuary can help management understand and communicate the issues and challenges related to this important estimate and also help with the explanation required for this disclosure.

Challenges in estimating the confidence level will depend on how well the aggregate probability distribution is understood. When the moments of the probability distribution can be estimated, the relative uncertainty related to such estimates increases with the order of the moment estimated. Consequently, there are risks associated with interpreting the confidence level disclosure with a false sense of precision in such estimates. This risk can be mitigated by providing a better understanding around the qualitative considerations involving the level of subjectivity and judgement involved in estimating the confidence level.

In determining the confidence level using a particular technical method, there are additional considerations related to how well the method reflects the full range of outcomes and whether the method used is stable over time, is fairly representative of ongoing conditions, and can be replicated.

As the degree of uncertainty (in the confidence level estimate) increases, the need for judgement increases, and, with it, the need to better understand and communicate to the entity, both the uncertainty and the way in which judgement is exercised.

Another important consideration is the level of precision indicated in the disclosure.

**4.20. Should confidence level disclosure be done gross or net of reinsurance?**

IFRS 17 does not specify whether the disclosure of a confidence level is intended to be on a gross or net of reinsurance basis. The entity's reported risk adjustment is disclosed on a gross level. If the entity has reinsurance held, the entity also separately discloses the risk adjustment associated with reinsurance held. The entity's net of reinsurance risk adjustment is not disclosed as a separate item. The estimation of the confidence level for disclosure does provide meaningful information on a net of reinsurance basis, as that considers the overall risk position of the entity,

The basis for the level of disclosure of the confidence level (gross and reinsurance held, or net of reinsurance, or both) is likely to emerge from practices adopted by entities reporting risk adjustments, which will be guided in turn by market practice and the technique used to determine the risk adjustment.

**4.21. What is the appropriate granularity for disclosure of confidence levels?**

Paragraph 119 requires disclosure of the confidence level associated with the risk adjustment. IFRS 17 only requires one confidence level disclosure for the reporting entity. However, additional disclosure at a more granular level is not prohibited.

The overall disclosure policy of the reporting entity is relevant to determine the approach to confidence level disclosure.

**4.22. To what extent is it appropriate to use analyses and measurements made for other purposes (such as pricing, embedded value, regulatory reporting ,or capital modelling)?**

IFRS 17 does not mandate particular technique(s) to determine risk adjustments, nor does it specifically limit the techniques that may be used or provide examples of appropriate techniques.

While it may often be desirable to make use of analyses conducted for other purposes, the conclusions drawn from such analyses may not be transferrable. Such conclusions depend on the perspective and purpose for which they are required. Risk adjustments are set in a fulfilment perspective in comparison to expected values, that are required to represent unbiased mean values. This is not necessarily true of measurements set in other contexts.

For further detailed discussion on this topic, refer to the IAA Monograph *Risk Adjustments for Insurance Contracts Under IFRS 17*.

**4.23. To what extent can different approaches be used to determine the risk adjustment for different groups of insurance contracts?**

There is no requirement to use a single model or approach for all the business or all the risks. An entity may use a mix or blend of methods to set risk adjustments across different businesses provided such mix of methods makes appropriate allowance for diversification and is done in a way that can be reasonably disclosed and explained to external auditors and is relevant to users.

**4.24. What time horizon is used in measuring the risk adjustment?**

The "*compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk*" (paragraph 37) refers to the time horizon which includes all future cash flows within the contract boundary for all insurance contracts in force at the reporting date until reaching their contract boundaries, as defined by IFRS 17.

**4.25. Where the measurement of the risk adjustment utilises a separate capital measure, what time horizon is used for the capital measure?**

The time horizon used for a capital measure may be different than the time horizon used in measuring the risk adjustment, without causing inconsistencies. For example, a capital measure may use a short time horizon (e.g., 1-year, with terminal provision). The measurement of risk adjustment may use, as input, a series of capital measures that each use a 1-year time horizon. For example, the capital measure may be based on a short time

horizon (using a 1-year horizon) for capital at a given point in time, then such capital measures would be projected for future time points over the contract boundary, and then each future point estimate would be multiplied by a cost of capital rate, and then discounted back to the measurement date.

## Chapter 5 – Level of Aggregation

Before consulting this chapter, be sure to read the introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

### 5.A. What does this chapter address?

This chapter considers the level of aggregation/unit of account that needs to be considered when valuing insurance contracts within the scope of IFRS 17.

### 5.B. Which sections of IFRS 17 address this topic?

Paragraphs 14–24 provide guidance on this topic.

Paragraphs BC115–BC139 also provide background on the subject.

### 5.C. What other IAA documents are relevant to this topic?

None

#### Overview

### 5.1. What is the purpose of aggregation?

IFRS 17 deals purely with insurance contracts and investment contracts with *Discretionary Participating Features* (DPF). In most instances, it is likely to be impractical for an entity to measure all insurance contracts at individual contract level. Consequently, all insurance contracts in the scope of IFRS 17 may be aggregated into *portfolios of insurance contracts* ("portfolios") and *groups of insurance contracts* ("groups") within portfolios on initial recognition and not reassessed subsequently (paragraph 24). In doing so, the IASB intends to limit the obscuring of information that would occur by offsetting onerous contracts in one group with profitable or potentially onerous contracts in another *and to report the profits in appropriate reporting periods* (paragraphs BC119 and BC136).

### 5.2. What are the levels of aggregation?

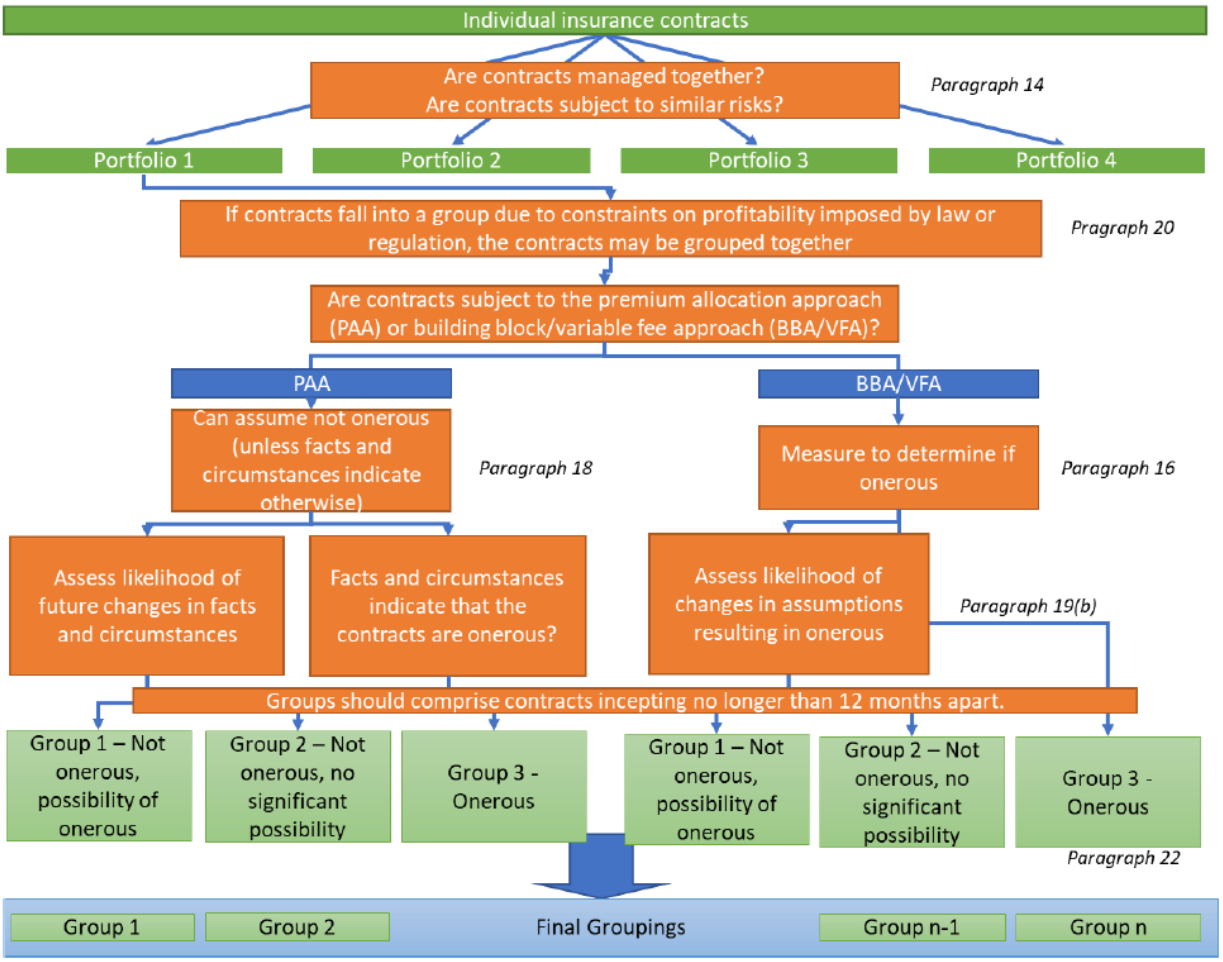
In determining the level of aggregation, an entity identifies portfolios. Each portfolio is divided into groups, which distinguish onerousness and profitability, and the entity aggregates individual contracts into these groupings. An entity cannot include contracts issued more than one year apart in the same group (paragraph 22).

The level of aggregation discussed in this chapter refers to aggregation for the purpose of measurement. Disclosures may require a different level of aggregation, and this is covered in Section E – Presentation, and Disclosure.

The group as defined by IFRS 17 is the minimum level of aggregation required. Lower levels of aggregation are permissible so long as the requirements of IFRS 17 are met.

A summary of the levels of aggregation follows in Figure 5.1.

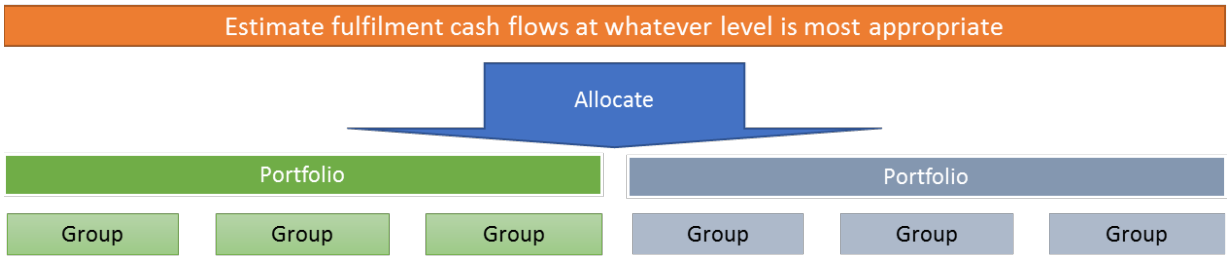
**Figure 5.1: Level of aggregation**




## 5.3. At what level of aggregation are fulfilment cash flows required to be estimated?

When measuring groups, an entity may estimate the expected present value of future cashflows, discount rates, and the risk adjustment for non-financial risk at a higher (or lower) level of aggregation than the group, provided the entity is able to include the appropriate fulfilment cash flows in the measurement of the group by allocating such estimates to groups (paragraph 24). This is depicted in Figure 5.2.

**Figure 5.2: Allocation of Fulfilment Cash Flows**



**5.4. Why is the level of aggregation important?**

The level of aggregation determines the level at which the recognition and measurement requirements of IFRS 17 (paragraph 24) are applied. Measurement of the Contractual Service Margin ("CSM") and earning patterns under the Premium Allocation Approach ("PAA") are generated at group level, and, therefore, the level of aggregation affects profit recognition patterns for the entity. Groups will need to be tracked and measured throughout the coverage period of the contracts (paragraphs 40-52, 'Subsequent measurement'). Grouping ensures that there is systematic and consistent treatment of cross-subsidies between insurance contract reporting.

For many entities, the grouping exercise could have significant practical and operational issues in respect of the entity's administration, valuation, and accounting systems.

## Identification of Portfolios

**5.5. What is a portfolio of insurance contracts?**

A portfolio of insurance contracts is defined in Appendix A as "*Insurance contracts subject to similar risks and managed together.*" Each portfolio forms a partition of the total insurance business of the reporting entity. Accordingly, each contract is, at inception, allocated to one portfolio, or may, under certain circumstances (see questions 5.8 and 5.9), be apportioned across multiple portfolios if the contract covers different types of risks which are separated into different contracts each of which is allocated to a group.

**5.6. What does "subject to similar risks" mean?**

No clear definition of similar risks is given in IFRS17. Paragraph 14 states: "*Contracts within a product line would be expected to have similar risks and hence would be expected to be in the same portfolio if they are managed together.*"

**5.7. What does "managed together" mean?**

Again, there is no clear definition in IFRS17 for this term. Hence, judgement may be required on what constitutes managed together.

From a practical perspective, the considerations relating to "managed together" noted above will require assessment based on usual business practices. This may naturally result in the portfolios for IFRS 17 reporting.

It is expected that the determination of portfolios will vary between entities due to different sizes and complexity of entities as well as the different ways in which business is managed. A practical approach to determining the portfolios for an entity might rely on internal management reporting systems.

An entity might change how it manages its business over time, and, as a result, the number of portfolios might change over time. This is an anticipated response under IFRS 17, although it does not necessarily affect the number of groups as historical groups do not change (paragraph 24).

### 5.8. Can multi-peril (or multi-benefit) products be aggregated in the same portfolio?

Peril aggregation is a common feature of non-life insurance products. Benefit combination is also a common feature of life insurance products. If the contracts are subject to similar risks and managed together, then it could be concluded that multi-peril (or multi-benefit) contracts can be aggregated into portfolios.

Also, relevant may be the following TRG papers and references related to the separation and combination of insurance contracts:

- Paper AP01 for the February 18, 2018 TRG meeting and discussion thereof, which provide IASB staff views on when it may be appropriate to separate insurance contracts.
- Paragraph 9 and paper AP01 for the May 18, 2018 TRG meeting and subsequent discussion which provide IASB staff views on the combination of insurance contracts,
- Paragraph BC119 states that aggregation set by regulators serves a different purpose than aggregation for financial reporting; and
- Peril-type aggregation used for actuarial modelling in reserving would not necessarily be a suitable basis for aggregation especially if focussed solely on solvency and valuation requirements.

This supports the bundling of perils within portfolios and groups from a practical standpoint. However, if the insurance contract covers multiple perils or benefits, then separation of these components into separate contracts for accounting contracts might be possible. The attribution of premium income to multiple peril groups could be challenging, particularly if those perils were not priced explicitly within an additive pricing structure. This complexity might lead to potential inaccuracies in financial reporting, notably the consideration of whether the groups are onerous. Materiality of the potential inaccuracies in financial reporting is a consideration.

Although not explicitly prohibited or prescribed in IFRS 17, it is unlikely that individual multi-peril contracts would be split into separate portfolios for the purposes of measurement under IFRS 17 purely due to their multi-peril nature. This is discussed in paper AP01 for the February 18, 2018 TRG meeting, where the intention is clearly stated that a contract with legal form of a single contract would generally be considered a single contract in substance. There might be circumstances where this is not the case, and the TRG observed that:

"*..overriding the contract unit of account presumption by separating insurance components of a single insurance contract involves significant judgement and careful consideration of all relevant facts and circumstances. It is not an accounting policy choice.*" (TRG Summary Feb 18 paragraph 7(b)(ii)).

**5.9. Can separate types of risk be split out from a contract?**

Following deliberations at the February 2018 and May 2018 TRG meetings, it is generally agreed that the lowest unit of account is the contract. There is a presumption that a contract with the legal form of a single contract would generally be considered as a single contract in substance.

However, there might be certain facts and circumstances where the legal form of a single contract does not reflect the substance and could therefore warrant splitting out of the different components of the contract. Examples include where transactions that are typically written as separate contracts have been bundled together as one legal contract for customer convenience or where a set or series of insurance contracts with the same or a related counterparty can be treated as a single contract. Areas to consider include the level of interdependencies between the different components of the contract (such as shared deductibles and limits) or where the lapse or termination of one component results in the termination of the whole contract.

**5.10. When is a contract allocated to a portfolio?**

Practically, at the same time as the contract is added to a group, i.e., the date where the contract is to be recognized according to paragraph 25 and paragraph 28 (see question 5.13).

**5.11. Are portfolios fixed for all times?**

The allocation to portfolios and groups is covered in paragraphs 14-16. As the definition of a portfolio refers to a purely business criterion, the contracts that are considered similar risks and managed together may change over time. IFRS 17 requires a current assessment for any new business written. Portfolios for an entity might change over time for new business or renewal business as well as for the existing in-force business.

It is possible to change portfolios, but it is not possible to change groups (unless contract modification applies – see Chapter 14 – Contract Modifications and Derecognition). A contract is required to be assigned to a group (which is a subset of a portfolio) at initial recognition of the contract, and therefore portfolios may not cut across groups.

Organisational changes in the way contracts are managed may require further portfolios to be created for new business and/or renewed business (where this is accounted for as a new contract) but does not affect the allocation of already existing contracts which remain in their assigned groups.

### Partitioning into Groups

**5.12. What is a group of insurance contracts?**

A group of insurance contracts is a further partition of a portfolio according to when the contract is written and the expected profitability (paragraph 16 and Appendix A). Hence, a group includes contracts that are issued no more than 12 months apart and have the property that contracts expected to be loss making are not in in the same group as

contracts expected to be profitable. A group is a sub-set of a portfolio. Each group is sometimes referred to as a "unit of account", although this term is not used in IFRS 17.

**5.13. When is an issued contract grouped?**

Paragraph 25 specifies that a group is recognised at the earlier of the date when insurance coverage commences or the date the initial premium becomes due or if the group is onerous, when the group becomes onerous. New contracts are added to the group as they are issued, subject to the contracts being issued no more than one year apart (see question 5.14).

An entity should establish the group at initial recognition of the first contract which will be part of that group and should not reassess the composition of the group subsequently (paragraph 24) except in the cases of a specified contract modification or derecognition (paragraphs 72 and 76 respectively). This applies even if contracts within a group, or the group as a whole, are subsequently found to be onerous when they were not at initial recognition.

Question 5.11 refers to portfolios changing over time if the business changes how it manages its insurance contracts.

Significant contract modifications are covered in more detail in Chapter 14 – Contract Modifications and Derecognition.

**5.14. What is the meaning of the limitation to contracts being issued no more than one year apart at inception?**

Contracts that legally bind the insurer for only a short period (e.g., most non-life insurance contracts) may get reissued at the renewal date. The renewed contract will be a new contract under IFRS 17, and, hence, the renewal date may be (as one interpretation of) the issue date for such contracts.

A complication for some entities is that cohorts based on accident year may not necessarily correspond with contracts issued less than one year apart.

There is no requirement in IFRS17 for a group to cover the whole of a 12-month period nor for that period to coincide with the accounting period or a calendar year. The requirement is that the period for which contracts are grouped may be no more than one year.

The situation is more complex for contracts that bind the insurer for longer periods (e.g., most life insurance contracts). These contracts might be guaranteed renewable, and the contract legally continues subject to payment of the renewal premium due. Although the contract legally continues, IFRS 17 may treat the renewal date as the contract boundary and the renewal as creating a new "accounting-contract" for IFRS 17 purposes separate from the exiting contract. In this case, the underlying policy contract may be treated as multiple "contracts" for IFRS 17 purposes over its life (paragraph 35). In this case "issue" date may refer not to the original date of commencement but to the renewal date that incepted the accounting-contract under IFRS 17.

**5.15. How is a contract allocated to a group?**

Based on paragraph 16, each contract to be grouped is assigned to one of three categories:

a. Onerous (loss-making) at initial recognition;

b. At initial recognition, the contract has no significant possibility of becoming onerous subsequently; and

c. Any remaining contracts in the portfolio.

In practice, individual contract assignment might be possible, but insurers may choose not to determine each contract's fulfilment cashflows at issue date and may instead rely on differentiation of contracts corresponding with such elements as differentiation of risk and pricing. "Reasonable and supportable information" is the terminology used in IFRS 17. Paragraphs 17 and BC129 highlight the IASB's intention that the objective of assigning contracts to the three categories mentioned above can be achieved by assessing a set of contracts if the entity can conclude, using reasonable and supportable information, that the contracts in the set will all be in the same group.

Under the PAA, the entity should assume contracts in the portfolio are not onerous at initial recognition unless facts and circumstances indicate otherwise (paragraph 18).

**5.16. How might groups be different for contracts with mutualisation features?**

When considering how to apply the grouping for contracts with mutualisation features, consideration might be given to how mutualisation and participation features might affect the allocation to groups. This is the case in respect of both considering whether contracts are subject to similar risks (portfolio allocation) and the split in respect of profitability.

IFRS 17 specifically addresses mutualisation in paragraphs B68-B71 and B103. The overarching principle of mutualisation is that the cash flow allocation to groups is based on all rights and obligations of the portfolio that may participate in a common pool of underlying items.

The fulfilment cash flows for a group:

(a) *include payments arising from the terms of existing contracts to policyholders of contracts in other groups, regardless of whether those payments are expected to be made to current or future policyholders; and*

(b) *exclude payments to policyholders in the group that, applying (a), have been included in the fulfilment cash flows of another group.*

Similarly, for this calculation, cash flows to policyholders implicitly transferred to other groups are excluded. Note this assumes that profit from the donor group has not already been released. For further detail on measurement of contracts with direct participation features, refer to Chapter 8 – Contracts with Participation Features and Other Variable Cashflows.

Because of the allowance for cash flows to policyholders to be transferred between groups, what would otherwise be an onerous group will potentially be profitable. Similarly, if a group is potentially about to become onerous, then a transfer from a profitable group is expected to prevent that.

One might argue that there is no point in sub-dividing groups by year of issue, because cash flows from a more profitable cohort could be transferred to a less profitable cohort. The ability to transfer between cohorts means that the profitability for business written in separate periods may be less differentiated. There may be particular operational challenges when determining the groups in respect of businesses where new policies share in profits generated by the existing book and vice versa.

However, the IASB has stipulated that groups be differentiated by not containing contracts issued more than one year apart. This is because the IASB expects that profitability would vary over time, and, at the extreme, one cohort might be onerous while another is profitable. The IASB did not want this information obscured by offsetting onerous contracts in one group with profitable contracts in another (see paragraph BC119 and the last two sentences of paragraph BC136).

Thus, the IASB still felt that subdivision by year of issue was appropriate even where there were transfers of cash flows between groups (see paragraph BC138). Notwithstanding this, the requirement in paragraph 22 is that an entity should not include contracts issued more than one year apart.

Paragraph BC138 notes that the amounts to be reported for each group are specified, but it is not necessary to calculate amounts at a group level. Thus, calculations could be undertaken at a higher (or lower) level, and the results then allocated to each group. This is important in the context of mutualisation, as IFRS 17 assumes that the amount of any transfers will be specifically known, whereas the actual quantification is likely to vary over time as facts and circumstances change. The September 2018 TRG paper AP10 contains some information on this topic.

**5.17. How might the pool of underlying items affect portfolios?**

As explained in question 5.5, portfolios are defined as contracts subject to similar risks and managed together. The entity will determine how risks and the management thereof are affected by the pool of underlying items.

For example, it might be determined that contracts are subject to different risks and hence be in different portfolios, notwithstanding that they participate in the same pool of underlying items. Conversely, it may be that a single portfolio covers contracts that participate in multiple pools of underlying items.

**5.18. How are contracts added to an existing group?**

The establishment of a group can be a process that spans a period of up to one year. The original classification of the group determines the allocation of new contracts during that period. If the expected profitability of an open group changes during that period, it might be appropriate to close the open group and open a new one.

**5.19. What is "reasonable and supportable information" when determining whether a set of contracts can be considered as a group?**

Paragraph 17 indicates consideration should be given to the availability of reasonable and supportable information to justify the grouping of contracts. Reasonable and supportable information could be considered to be readily available internal management and reporting information. Examples might include, but are not limited to, policy disclosure statements, valuation reports, pricing reports, and other key profitability metrics presented to senior management or the Board of Directors.

In the absence of such information, an entity would determine the group to which the contracts belong by considering the fulfilment cash flows of individual contracts at the date of initial recognition (paragraph 17). Where the entity can reasonably undertake a measurement approach at an individual contract level, this would also enable a grouping assessment to be made (see also question 2.10).

**5.20. What is the difference between no significant possibility of becoming onerous and other non-onerous contracts?**

Paragraph BC130 discusses the intent of this separation in a limited manner.

Internal guidance might be created by an entity that specifies the details of the metrics that are required to determine whether contracts fall into the no significant possibility group. Given the judgmental nature of this determination, the approach is likely to vary across entities.

**5.21. Does the liability for incurred claims need to be separated or identified by group (portfolio, underwriting year, level of onerousness)?**

Paragraph 40 stipulates that:

> *The carrying amount of a group of insurance contracts at the end of each reporting period shall be the sum of:*
>
> *(a) the liability for remaining coverage […] and*
>
> *(b) the liability for incurred claims, comprising the fulfilment cash flows related to past service allocated to the group at that date…*

In practice, it is anticipated that the liability for incurred claims could be measured at a different level of aggregation than the defined groups and then allocated down or aggregated up to the adopted IFRS 17 groups. Paragraphs 24 and 33 make it clear that allocating the fulfilment cash flows to groups from a higher level of aggregation is quite acceptable for any type of valuation activity.

**5.22. What happens if the interim or financial year end cut short the grouping year? Is the reported weighted discount rate restated allowing for the remaining months?**

An entity may add contracts to a group as long as they are not issued more than one year apart from any other contracts in the group. As contracts are added to a group, this may result in a change in the weighted-average discount rates at the date of initial recognition

for the group. As indicated in paragraph 28, these revised discount rates are applied from the start of the reporting period in which the new contracts are added to the group, to all contracts in the group. See question 3.46 for a discussion of various options for calculating the weighted average discount rate.

Careful consideration may be needed when changing the weighted discount rate. One key consideration is paragraph B137, which provides an accounting policy choice as to whether to change the treatment of accounting estimates made in previous interim financial statements when applying IFRS 17 in subsequent financial statements and in the annual reporting period. The option chosen under B137 will affect the approach to determining the weighted average discount curve. The discount curve may be 'locked in' at the interim reporting date or retrospectively changed in subsequent interim financial statements or in the annual reporting period, depending on which option is selected.

### Further Disaggregation

**5.23. Is it appropriate to determine groups on a more granular level than prescribed?**

There are no constraints on the refinement of groups beyond the minimum level prescribed (paragraph 21).

**5.24. Can a group comprise of a single contract?**

Yes, a group can comprise a single contract if that is the result of the grouping exercise (paragraph 23).

### Regulatory Constraints

**5.25. How does community rating and legislated limitations on use of underwriting variables impact grouping?**

Where law or regulation specifically constrains the entity's practical ability to set a different price or level of benefits for policyholders with different characteristics, those characteristics can be ignored for allocating policies between groups. Therefore, if a particular characteristic that is restricted would result in policies being split between onerous and other allocations, this characteristic can be ignored. The exemption cannot be applied by analogy to other items (paragraph 20).

An example is the gender-neutral pricing regulations in Europe, where legislation requires that males and females be included in the same group even if there is statistical evidence of differences in risk. Another example is where regulation restricts the use of age, gender, and pre-existing conditions in pricing health insurance, which could result in some policies being onerous. In these circumstances, policies that would or would not be onerous due to these characteristics may be grouped together.

**5.26. How should one consider regulatory pricing constraints?**

The exemption in paragraph 20 applies only when law or regulation specifically constrains the entity's practical ability to set a different price or level of benefits for policyholders with different characteristics. The categorisation would be applied either to the portfolio as a whole, or groups excluding the regulatory or legal constraints. Care needs to be taken

in determining the extent of the legal or regulatory constraint and delineating it from business decisions (see paragraphs BC133 and BC134).

### Other Questions

**5.27. How are reinsurance contracts aggregated?**

The entity accounts for reinsurance contracts held separately from the underlying insurance contracts to which they relate. Entities apply the aggregation requirements in paragraph 61 to "*divide portfolios of reinsurance contracts held applying paragraphs 14–24, except that the references to onerous contracts in those paragraphs shall be replaced with a reference to contracts on which there is a net gain on initial recognition. For some reinsurance contracts held, applying paragraphs 14–24 will result in a group that comprises a single contract*".

Further discussion is presented in Chapter 9 – Reinsurance.

**5.28. What reinsurance mismatches might arise?**

A principle of IFRS 17 (paragraphs B66(b) and BC298) is to separate the insurance contract liability of the underlying contract from any associated liability for reinsurance held. This means, for example, an underlying contract that is onerous at inception would still be considered onerous and accounted for as such even where 100% of this risk is ceded to another party on an original-terms coinsurance basis while a gain will be recognised on the reinsurance held covering that underlying contract (see paragraphs 66A and 66B).

The variable fee approach ("VFA") cannot be applied to reinsurance held (or issued) business, even if the VFA is applied to the underlying insurance contracts (see Chapter 9 – Reinsurance). This may create mismatches in treatment between inwards and ceded business.

**5.29. What are the implications of aggregation for presentation and disclosure?**

An entity is required to present income or expenses from reinsurance contracts held separately from the expenses or income from underlying insurance contracts issued (paragraph 82).

Paragraph 78 requires the separate presentation of the portfolios of contracts that are issued as assets and that are issued as liabilities. Portfolios of contracts in a liability position are those where the aggregate IFRS 17 liability across the contracts in that portfolio is positive. Portfolios of contracts in an asset position are those where the aggregate IFRS 17 liability across the contracts in a portfolio is negative.

Further discussion is presented in Section E – Presentation, and Disclosure.

**5.30. How are business combinations and portfolio transfers treated?**

On acquisition of a portfolio or set of contracts, paragraph B93 applies. The acquirer reassesses the groups using paragraphs 14-24 to identify the groups as if the contracts had been issued on the acquisition date. As the contracts would all have the same acquisition date, the requirement relating to "issued less than 12 months apart" no longer

applies. Illustrative example 14 from IFRS 17 Illustrative Examples shows the accounting for this.

A business combination within the scope of IFRS 3 will also require additional considerations in respect of the portfolios and groups to which these contracts belong. The portfolios that were split into groups based on profitability may have changed from the original entity.

When purchasing an entity, contracts are assessed at the date of the business combination date within the scope of IFRS 3 (paragraph B93).

For intra-group transfers of business, if it is assessed as a transfer of business that is not an IFRS 3 business combination, paragraph B93 does not apply. (paragraph 39)

Further discussion is presented in Chapter 11 – Business Combinations and Portfolio Transfers.

**5.31. What exceptions are allowed at transition?**

This will depend on which transition method is being used to measure the group of insurance contracts. Regardless of the transition method, once adopted, groups are fixed at transition, and contracts remain in the same group thereafter.

If a full retrospective approach is adopted, as per paragraph C3, there are no exceptions and business written up to transition is grouped applying IFRS 17 retrospectively as if it had always applied. That is, groups are established as if the issuer assessed this at initial recognition of the group of contracts, with no hindsight as to the actual profitability of the contracts.

If the modified retrospective approach is applied, as per paragraphs C8 and C9, the identification of groups can be carried out with the information available at the transition date. Also, groups can include contracts issued more than one year apart. However, this modification can only be used to the extent that an entity does not have reasonable and supportable information to apply a retrospective approach. If the entity does have the information to make the split by portfolio and group for a particular group, this information should be used.

If a fair value approach is adopted, as per paragraph C23, it is permitted (but not required) to include in a group contracts issued more than one year apart. The entity can only divide into groups issued within one a year (or less) where the entity has reasonable and supportable information to make the division. The difference here is that whereas for the other two approaches the entity must make the divisions if the information is available to do so, for the fair value approach the entity is allowed (but not required) to make the divisions if the information is available to do so.

Further discussion is presented in Chapter 12 – Transition.

## Chapter 6 – Contractual Service Margin and Loss Component

Before consulting this chapter, be sure to read the introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

### 6.A. What does this chapter address?

This chapter provides information about the contractual service margin ("CSM") – what it is, how it should be determined, and how it might change because of a range of factors – and the treatment of the loss component of onerous contracts.

### 6.B. Which sections of IFRS 17 address this topic?

Paragraphs 38 and 39, 43–52 and B96–B119 provide guidance on this topic.

Paragraphs BC218–BC226, BC228–BC256, and BC270–BC287 also provide background on the subject.

### 6.C. What other IAA documents are relevant to this topic?

None

### Overview

### 6.1. What is the purpose of the CSM?

The CSM is defined in Appendix A of IFRS 17 and represents the unearned profit the entity will recognise as it provides services under the insurance contracts in a group of insurance contracts ("group") when the entity does not use the Premium Allocation Approach ("PAA") as the measurement model for the group of contracts. The CSM is a component of the insurance contract liability for a group.

The CSM is measured at initial recognition for a group as the excess (if any) of the expected present value of cash inflows over cash outflows within the boundary of the contract (including acquisition costs) after adjustment for non-financial risk.

If outflows at initial recognition are greater than inflows, the group is onerous, no CSM is established, and a loss component is calculated at the time of initial recognition. The loss component is recognised immediately, while the CSM is recognised gradually over time in line with the services provided.

Thereafter, the CSM is rolled forward with interest accrual, adjustments for some experience items, changes in estimates of future cash flows, and allowance for the risk adjustment for non-financial risk, dependent on the measurement model adopted. The CSM is then released as part of insurance service revenue based on coverage units representing the service provided in the period and services expected to be provided in the future.

This means that while the initial determination of the CSM for the group is a prospective calculation, thereafter it is primarily a retrospective calculation or roll forward (i.e., the retrospectively calculated CSM value is adjusted based on the relevant new information and released in line with the services provided).

The CSM reflects the IASB's view that profit on insurance contracts should only be recognised as service is provided, which is consistent with IFRS 15 *Revenue from Contracts with Customers*, and not on the day of policy sale (see paragraphs IN7 and BC18).

## Measurement on Initial Recognition

### 6.2. How is the CSM determined at initial recognition?

The CSM for a contract is established at initial recognition to offset any profit that may arise from simply considering the fulfilment cash flows. The fulfilment cash flows include expected future cash outflows and inflows as well as the risk adjustment for non-financial risk. At initial recognition, the CSM considers all contractual cash flows within the contract boundary.

In the case of a profitable contract, the outcome of measuring the present value (at inception) of all cash flows should be negative (total cash outflows minus total cash inflows), which would result in a negative liability (or asset). This negative liability is eliminated at contract inception by the creation of the CSM as an additional component of the liability of the group to increase the total liability to zero. However, pre-coverage cash flows can impact the amount actually recognised on the balance sheet (see question 6.3). The outcome in the case of an unprofitable contract is discussed in question 6.4.

Other than in the case of reinsurance held, the CSM is subject to a minimum of zero. For the CSM for reinsurance held, see question 6.32.

There is no difference in the calculation of the CSM at inception for contracts without direct participation features and those with direct participation features. For information about subsequent measurement of the CSM for insurance contracts with direct participation features, see question 6.22.

The CSM at initial recognition and subsequently may be determined at the level of the group.

### 6.3. What are pre-coverage cash flows?

Paragraph 25 states that the recognition date of the contract is the earliest of the following:

a) *the beginning of the coverage period of the group of contracts;*
b) *the date when the first payment from a policyholder in the group becomes due; and*
c) *for a group of onerous contracts, when the group becomes onerous*.

Pre-recognition cash flows include contractual cash flows relating to the group that were paid or received by the entity before the recognition date of the group. The recognition date determines which cash flows are pre-recognition and which are not. Examples of pre-coverage cash flows may include:

- Premiums under the contract;

- Commissions spent due to contractual obligations with an intermediary in response to writing the contract; and
- Costs meeting the definition of "insurance acquisition cash flows" arising during the application and underwriting process (i.e., underwriting costs) and issuance cost.

Pre-coverage cash flows include any insurance acquisition cash flows for which an asset or liability is held prior to the recognition of the group that gave rise to them (see paragraph 38(c)). Further, pre-coverage cash flows include cash flows that are directly and indirectly allocated to a contract (e.g., acquisition cost spent without success) provided they are directly attributable at a portfolio level.

**6.4. Can the CSM be negative at initial recognition?**

Except in the case of reinsurance held (see Chapter 9 – Reinsurance), the CSM cannot be negative, and when the calculation indicates a negative value, the CSM is instead set to zero. This results in a loss being reported equal to the amount by which the CSM otherwise would have been negative.

The negative balance is referred to as the loss component (see questions 6.27 to 6.31 on onerous contracts).

## Subsequent Measurement: Contracts without Direct Participation Features

**6.5. What changes are recognised in the CSM for contracts without direct participating features?**

Paragraph 44 outlines how the CSM for a group without direct participating features moves over time. It is presented as follows:

CSM at the start of the reporting period

*plus* the effect of any new contracts added to the group (see question 6.6);

*plus* the value of interest accretion (see question 6.7);

*plus* the changes in fulfilment cash flows relating to future service (see questions 6.8 – 6.11);

*plus* the value of currency exchange differences;

*less* the amount recognised as insurance revenue because of the transfer of services (see questions 6.12 – 6.21)

= CSM at end of the reporting period.

Alternative presentations are possible, and there is no prescribed calculation order other than the amortization of the CSM for services over the period, which is the last step.

**6.6. When can new contracts be added to a group?**

Only contracts recognised during the reporting period can be added to a group during that reporting period. In accordance with paragraph 28, new contracts can be added to

the group after the end of the reporting period (subject to all contracts in the group being issued no more than one year apart, see paragraph 22).

**6.7. What interest rate is accreted on the CSM?**

If the general measurement approach ("GMA") is used, interest is accreted on the carrying amount of the CSM during the reporting period using the discount rates applied on initial recognition to reflect the time value of money (paragraphs 44(b) and B72(b)). These discount rates are applied to nominal cash flows that do not vary based on the returns of any underlying items. For further details on determining discount rates, see Chapter 3 – Discount Rates.

**6.8. Which changes in fulfilment cash flows qualify for adjusting the CSM?**

Paragraph 44(c) states that the CSM is adjusted for:

> *the changes in fulfilment cash flows relating to future service as specified in paragraphs B96–B100, except to the extent that:*
>
> *i. such increases in the fulfilment cash flows exceed the carrying amount of the contractual service margin, giving rise to a loss (see paragraph 48(a)); or*
>
> *ii. such decreases in the fulfilment cash flows are allocated to the loss component of the liability for remaining coverage applying paragraph 50(b)".*

Table 6.1 summarises which components underlying the fulfilment cash flows qualify for adjusting the CSM for contracts without direct participation features.

**Table 6.1: Which changes in fulfilment cash flows qualify for adjusting the CSM?**

| Item | Adjust CSM? |
|---|---|
| The effect of any new contracts added to the group (paragraph 44(a)) | Yes |
| Change in present value of cash flows related to future coverage and other services due to: | |
| Experience adjustments arising from premiums received in the period that relate to future service, and related cash flows such as insurance acquisition cash flows and premium-based taxes, measured at the locked-in discount rates (paragraph B96(a)) | Yes |
| Changes in estimates of the present value of the future cash flows in the liability for remaining coverage (e.g., due to either assumption changes or differences in number or characteristics of contracts in force at measurement date from that expected), measured at the locked-in discount rate (paragraph B96(b)) | Yes |
| Differences between the actual and expected investment component paid in the period, measured at the locked-in discount rate (paragraph B96(c)) | Yes |
| Changes in the data information affecting the risks of the policyholder | Yes |
| Change in risk adjustment for non-financial risks that relate to future service (paragraph B96(d)) | Yes |
| Change in estimates that do not relate to future service: | |
| Change in the time value of money and financial risks (paragraph B97(a)) | No |
| Change in estimates of fulfilment cash flows in the liability for incurred claims (paragraph B97(b)) | No |
| Experience adjustments[24] on current period cash flows except those described above (paragraph B97(c)) | No |

Note that paragraph 67 specifies that changes to fulfilment cash flows that result from changes in the risk of non-performance by the issuer of a reinsurance contract held do not relate to future service and therefore do not adjust the CSM

[24] Experience adjustments as defined in IFRS 17, Appendix A.

**6.9. What is the difference between the expected and actual investment component payable in the period that adjusts the CSM?**

If, due to actual experience differing from expected experience, an investment component of the contract (i.e., an amount to be repaid to the policyholder under all circumstances) that was expected to be repaid in the current period is not repaid, then it will be paid at some time in the future. As this repayment was not originally included in the estimate of future cash flows, the estimate is increased by the present value of the future repayment at a later estimated repayment date.

Per paragraph B96(c), a change in the estimate of such future cash flows adjusts the CSM (i.e., decreases the CSM by the present value of the future repayment of the investment component) applying the locked-in rate according to paragraph B72(c).

The CSM is adjusted for difference between actual and expected investment components during the period at the locked-in discount rate (paragraph B96(c)).

The opposite bookings apply if an investment component is repaid in the current period and it was expected to be repaid in a future period.

**6.10. How are changes in the risk adjustment for non-financial risk reflected in the CSM?**

The CSM should be adjusted for changes in the risk adjustment for non-financial risk relating to services provided in future periods (paragraph B96(d)), subject to the condition that the CSM should not be negative. Changes in the risk adjustment for non-financial risk relating to coverage and other services provided in the current or past periods should be recognised as insurance revenue.

The entity can disaggregate the change in risk adjustment for non-financial risk between the insurance service result and insurance finance income or expenses (paragraph 81). If the entity does not disaggregate in this way, then the entire change in risk adjustment is disclosed as part of the insurance service result.

**6.11. Does a change in the discretionary cash flows paid to policyholders during the reporting period for an insurance contract without direct participation features change the CSM?**

Yes, if the entity has discretion over the cash flows to be paid to policyholders for insurance contracts without direct participation features, then a change in the discretionary cash flows is regarded as relating to future service and adjusts the CSM (paragraph B98).

To determine how to identify a change in discretionary cash flows, see paragraphs B98-B100.

### Transfer of Services

**6.12. How is the transfer of services determined?**

The amount of the CSM recognised as insurance revenue for a group in each period reflects the services provided under the group in that period (see paragraphs 44(e), 45(e), 66(e), and B119).

The entity allocates the CSM at the end of the period equally to each coverage unit provided in the current period and those expected to be provided in the future within the contract boundary and recognises in profit or loss the amount allocated to the coverage units provided in the current period (see question 6.13).

**6.13. Does the transfer of the service in the reporting period (revenue) include the estimate changes done at the end of the period or do the changes impact only to the future periods?**

The transfer of the services in the reporting period includes the estimated changes made at the end of the period. The CSM at the start of the reporting period is adjusted for the changes in estimates of the present value of the future cash flows (paragraphs 44(c) and B96(b)) and the amount recognised as insurance revenue because of the transfer of services in the period. The amount is determined by allocating the CSM at the end of the period (before recognising any amounts in profit or loss to reflect the services provided in the period) equally to each coverage unit provided in the current period and expected to be provided in the future (paragraphs 44(e) and B119(b)). Refer also to paragraphs BC221 and BC224(e).

**6.14. What is a coverage unit?**

The coverage units establish the amount of the CSM to be recognised in profit or loss for services provided in the period. Coverage units reflect "the quantity of the benefits provided under a contract and its expected coverage duration" (paragraph B119(a)).

Aspects of IFRS 17 relevant in interpreting coverage unit include the coverage period and the insurance contract services, which are defined in Appendix A

**Coverage period**: *The period during which the entity provides insurance contract services. This period includes the insurance contracts services coverage that relates to all premiums within the boundary of the insurance contract.*

**Insurance contract services:** *The following services that an entity provides to a policyholder of an insurance contract:*

*(a) coverage for an insured event (insurance coverage);*

*(b) for insurance contracts without direct participation features, the generation of an investment return for the policyholder, if applicable (investment-return service); and*

*(c) for insurance contracts with direct participation features, the management of underlying items on behalf of the policyholder (investment-related service).*

I**nsured event**: *An uncertain future event covered by an insurance contract that creates insurance risk.*

The application guidance (included within paragraphs B7- B32) discusses what constitutes insurance risk.

The recognition of the CSM in insurance revenue is related to the transfer of insurance contract services (paragraphs 44 and 45). Paragraph 44(e) states:

> *"the amount recognised as insurance revenue because of the transfer of insurance contract services in the period, determined by the allocation of the contractual service margin remaining at the end of the reporting period (before any allocation) over the current and remaining coverage period, applying paragraph B119."*

Paragraphs BC279 to BC283 set out the IASB's rationale for the release of the CSM and the use of coverage units for this purpose. In particular, the following were discussed and rejected by the IASB as the basis for release of the CSM:

a) pattern of expected cash flows (BC279(a));

b) the change in the risk adjustment for non-financial risk caused by the release from risk (BC279(a));

c) when the returns on investment components occur even where this drives total expected fee (BC280).

A discussion about how to determine the quantity of benefits in an insurance contract when determining the coverage units of a group was initially discussed at the February 2018 TRG meeting (paper AP05) and considered further and in more depth at the May 2018 TRG meeting (paper AP05 and TRG Meeting Summary). It was observed that:

> *IFRS 17 established principles, not detailed requirements, and detailed requirements would not work appropriately in all cases;*
>
> *determination of coverage units is not an accounting policy choice, but requires application of careful judgement and consideration of the facts and circumstances to best achieve the principle of reflecting the services provided in each period;*
>
> *the analysis of the examples discussed at the May 2018 meeting reflects the fact pattern of each example and does not necessarily apply to other fact patterns;*

In considering how to achieve the principle, TRG members observed that:

a) lapse expectations are included to the extent they affect expected duration of coverage;

b) the different levels of service across periods needs to be reflected in determination of coverage units;

c) the quantity of benefits is determined from the policyholder perspective and not the quantity of benefits expected to be incurred by the insurer;

d) a policyholder benefits from the insurer standing ready to meet valid claims should the insured event occur, hence the quantity of benefits relates to amounts that can potentially be claimed;

e) different probabilities of insured events across periods do not of themselves affect the stand-ready quantity of benefit provided to a policyholder, but where there are

different types of insured events, their different probabilities might affect the stand-ready benefit provided by the insurer; and

f) IFRS 17 does not specify particular method(s), and thus different methods may achieve the objective of reflecting the service provide in each period.

**6.15. What service should be reflected in coverage units?**

For contracts with direct participation features,

coverage units should be determined based on both insurance and investment related services (see paragraph B119). For contracts that are measured using the variable fee approach ("VFA"), coverage units used to amortise the CSM should be determined by considering the quantity of benefits and timing of both insurance coverage and investment-related services.

Similarly, for contracts without direct participation features that provide an investment-return service, coverage units should be determined by considering the quantity of benefits and expected period of both insurance coverage and any investment-return service. For such contracts without direct participation features, an investment-return service may exist if, and only if (see paragraph B119B):

- an investment component exists, or the policyholder has a right to withdraw an amount;
- the entity expects the investment component or amount the policyholder has a right to withdraw to include an investment return; and
- the entity expects to perform investment activity to generate that investment return.

**Are there examples available of coverage units?**

The appendices of the IASB's May 2018 TRG paper AP05 contain a large number of examples, and the paper contains the IASB staff's analysis of potential views of what coverage unit means in the context of specific facts and circumstances. These might be helpful in aiding understanding but only in the context of the specific set of facts and circumstances outlined in the paper. Included in Appendix B of the May 2018 TRG paper AP05 are thirteen examples covering the following products:

- Credit life loan insurance;
- Credit life product with variable amount of cover;
- Mortgage loss cover;
- Product warranty;
- Extended product warranty;
- Health cover;
- Proportional reinsurance issued;
- Reinsurance adverse development of claims with claim limit;

- Reinsurance adverse development of claims without claim limit;
- Transaction liability;
- Combination of different types of cover;
- Life contingent annuity; and
- Forward purchase of fixed rate annuity.

**6.16. Which proxies (e.g., premium and passage of time) can be used as coverage units?**

Depending on the facts and circumstances, the following methods (which are not an exhaustive list) might be reasonable proxies:

(i) Allocation over time but reflecting the expected coverage duration of contracts within the group;

(ii) Use of maximum contract cover in each period;

(iii) Use of cover amounts for which the policyholder could validly claim each period should insured event occur;

(iv) Use of premiums, but not if they:

a) Are receivable in different periods to the insurance services;

b) Reflect different probabilities of claim for the same insured event in different periods rather than different levels of stand-ready service; or

c) Display different levels of profitability in contracts rather than the stand-ready service.

**6.17. How do you deal with multiple benefits on a single contract?**

Alternative approaches that may be helpful when dealing with multiple benefits on a single contract include but are not limited to:

- Consider whether the contracts can be separated into components for the purposes of measurement (note the TRG covered considerations relating to the separation of insurance components during its February 2018 meeting);
- Determine coverage units based on the individual benefit components separately and adjust the CSM according to the recognition of all relevant coverage units during the period; and
- Consider whether a coverage unit reflecting the characteristics of all benefits can be determined.

**6.18. Can coverage units be calculated net of reinsurance?**

No. As underlying business and reinsurance are valued and reported separately, coverage units need to be determined gross rather than net. Coverage units for any related reinsurance treaties would be determined separately in respect of the reinsured amount for the treaties (paragraph 66).

### 6.19. When does the coverage period start and end?

See question 6.14 for the definition of coverage period. Coverage would normally start at the effective date of the insurance contract. In some circumstances, coverage may:

- Start later (e.g., for travel insurance, coverage may only start from the date of travel); or
- Appear to start earlier (e.g., a reinsurance treaty may provide cover on a claims-notified basis, such as for the emergence of claims not yet reported to the cedant but arising prior to the start date). In this reinsurance example, however, coverage of notified claims only starts from the start date of the reinsurance contract.

Normally, coverage will cease at the end date specified in the contract or the contract boundary, if earlier, or upon a valid claim arising before the end date for many types of life insurance contracts. Depending on the nature of the contract, claims arising from events occurring after that time may not give rise to a valid claim under the contract. Note that notification or settlement of the claim may occur after the end date, and the claim amount ultimately payable may continue to develop after the end of the coverage period. The notification, development, and ultimate settlement may be part of the liability for incurred claims and do not represent the provision of further coverage, or they can be the continuation of the coverage period as in the life-contingent annuities (see paragraph B5 and TRG September 2018 meeting AP1).

Unlike some types of insurance where a sequence of independent events might trigger the incurrence of a claim, for stop loss reinsurance, it is the occurrence of underlying claims for an amount that in total triggers a stop loss claim. With stop loss reinsurance, coverage is for claim payments arising in excess of the stop loss attachment point, and coverage starts from the point at which a valid claim could be made under the contract and not the underlying individual events.

Subsequent events may change the amount of the ultimate claim payable, but such events represent development of the claim amount and not the provision of further cover. For example, an accident may cause a disability that gives rise to the payment of an annuity for the remaining life of the person disabled. In this example, one view is that the coverage is for the occurrence of an event that causes such disablement. Others believe that the coverage is the ongoing condition requiring further payments. The TRG noted that contract styling and judgment might determine which view is most appropriate.

### 6.20. Can the coverage units include discounting?

Yes, coverage units can include the impact of the time value of money.

IFRS 17 is silent on whether the time value of money needs to be allowed for in determining the release pattern for the CSM, and if so, what discount rate is to be used for the coverage unit. Paragraph BC282 makes it clear that this has been deliberately left to the discretion of the entity.

An example of discounting and not discounting coverage units is provided in IFRS 17 Illustrative Example 2, IE17(e).

## Subsequent Measurement: Contracts with Direct Participating Features

(also refer to Chapter 8 – Contracts with Participation Features and Other Variable Cash Flows)

**6.21. How does subsequent measurement of the CSM differ for insurance contracts with direct participating features?**

For insurance contracts with direct participation features, the entity provides insurance and investment related services and is compensated for the services by a fee that is determined with reference to the underlying items. The CSM is subsequently measured similarly as for contracts without direct participating features (see question 6.5) except in relation to:

1 the entity's share of the change in the fair value of the underlying items (see question 6.22);

2 the interest rate accreted to the CSM (see questions 6.23 and 6.24); and

3 any financial risk mitigation (see question 6.25).

The amounts that adjust the CSM do not need to be identified separately. For example, entities need not identify the adjustments to the CSM for changes in the entity's share of the change in the fair value of underlying items separately from those related to changes to the fulfilment cash flows related to future services. A combined amount can be identified for some or all of them (paragraph 45).

Please also see the answer to question 8.12.

**6.22. How do changes in the fair value of underlying items impact the CSM?**

Changes related to the entity's share of the fair value of the underlying items (i.e., the variable fee) relate to future service and adjust the CSM except to the extent that:

- the entity meets the conditions for the financial risk mitigation option and chooses to adopt it;
- the entity's share of a decrease in the fair value of the underlying items exceeds the carrying amount of the CSM, giving rise to a loss; or
- the entity's share of an increase in the fair value of the underlying items reverses losses previously recognised.

**6.23. Is the CSM adjusted for changes in the effect of the time value of money and financial risks not arising from the underlying items?**

Changes in fulfilment cash flows arising from the time value of money and financial risks are regarded as part of the variable fee and recognised in the CSM unless the changes exceed the CSM or the risk mitigation option is taken (see paragraph B115 – B118).

**6.24. Which discount rates is used to calculate the CSM?**

No explicit interest is accreted on the CSM as the CSM is re-measured when adjusted for changes in the entity's share of the underlying items.

**6.25. What is required to use and the implications of using the financial risk mitigation option?**

Paragraphs B115 and B116 provide an option for an entity to reduce an accounting mismatch between the measurement of derivatives, non-derivative financial instruments at fair value through profit or loss, or reinsurance contracts held to mitigate financial risk and the insurance liability. Derivatives are generally measured under IFRS 9 at fair value through profit or loss. For direct participation contracts, changes in the carrying amount of the fulfilment cash flows related to financial risks adjust the CSM instead of being recognised immediately in profit or loss regardless of whether they relate to the entity's share of the underlying items.

An entity can choose to apply the option of not adjusting the CSM for some changes in the fair value of underlying items (paragraph 45(b)(i)) or the fulfilment cash flows relating to future service (paragraph 45(c)(i)) if it uses derivatives, non-derivative financial instruments at fair value through profit or loss, or reinsurance contracts held to mitigate the financial risk arising from the insurance contracts, and paragraph B115 applies.

For contracts without direct participation, such an accounting mismatch does not arise as changes in the carrying amount of the fulfilment cash flows related to financial risks do not adjust the CSM.

## Onerous Contracts

**6.26. What is an onerous group and how are they treated in profit or loss?**

A group is considered onerous if the CSM would otherwise be negative (i.e., there are future losses expected on the group after including allowance for the risk adjustment for non-financial risk). This can occur at the outset or occur on subsequent measurement if the following amounts exceed the CSM:

(a) unfavourable changes in the fulfilment cash flows allocated to the group arising from changes in estimates of future cash flows relating to future service; and

(b) for a group with direct participation features, the entity's share of a decrease in the fair value of the underlying items.

The amount by which the group is onerous is recognised immediately as a loss when it is known that it is loss making (paragraph 25).

**6.27. When are onerous contracts recognised?**

A group of onerous contracts needs to be recognised when the group is identified as being onerous, even if this is before coverage has commenced or the first premium is due though not before the contract is issued (paragraph 25).

**6.28. What is a loss component?**

The loss component at initial recognition represents the expected amount of future obligations not covered by future expected cash inflows on a risk-adjusted present value basis applying the locked-in discount rate as applied for adjusting the CSM. Any change,

particularly any fulfilment of that part of the future obligations, is not presented as insurance revenue, as insurance revenue can arise only from premiums. Changes in the loss component are recognised as positive or negative insurance service expenses (i.e., reversal of the loss component, see paragraphs 49 and 103(b)(iv)).

**6.29. How is the loss component tracked over time?**

The loss component is tracked and adjusted over time for further losses and loss reversals by allocating any changes in the fulfilment cash flows due to changes in estimates of future cash flows relating to future service, which if:

i) Unfavourable, increase the loss component and give rise to a further loss; or

ii) Favourable, reduce the loss component, give rise to loss reversal and re-establishment of the CSM once the loss component is extinguished.

The remaining change in the fulfilment cash flow of the group is allocated on a systematic basis between the loss component and the balance of the liability for remaining coverage (paragraphs 50(a)). According to paragraph 51:

*The subsequent changes in the fulfilment cash flows of the liability for remaining coverage to be allocated applying paragraph 50(a) are*

*i) estimates of the present value of future cash flows for claims and expenses released from the liability for remaining coverage because of incurred insurance service expenses;*

*ii) changes in the risk adjustment for non-financial risk recognised in the profit or loss because of release from risk; and*

*iii) insurance finance income or expenses.*

The systematic basis used needs to ensure that the loss component is extinguished by the end of the coverage period of the group (paragraph 52). Examples of how this can be done include but are not limited to:

- the same release method that would have been applied to the group if there had been a CSM (e.g., coverage); and
- the opening balance of the loss component as a percentage of the future cash flows and the risk adjustment for financial risk relating to future service (see Illustrative Example 8).

**6.30. How are onerous contracts dealt with if they are acquired through a transfer of business?**

Paragraph B95A outlines that the amount identified as being onerous is either classified as goodwill or gain on a bargain purchase for contracts acquired in a business combination within the scope of IFRS 3 or as a loss in profit or loss for contracts acquired in a transfer.

## Reinsurance Contracts Held

**6.31. How is the CSM determined at initial recognition for reinsurance held?**

A CSM is determined for a reinsurance held contract at initial recognition using the same approach as for any direct contract, and the concept of an onerous reinsurance held contract does not exist (paragraph 68). This difference means that at initial recognition the CSM can either:

a. reduce the reinsurance held asset (where the present value of reimbursements from the reinsurance contract exceeds the present value of reinsurance premiums) and therefore defer recognition of profit from the reinsurance contract; or

b. increase the reinsurance held asset (where the present value of reinsurance premiums exceeds the present value of reimbursements from the reinsurance contract) and therefore defer recognition of losses from the reinsurance contract (see paragraph 65(a)).

The following table shows the measurement of a reinsurance contract where the CSM is negative (referred to as Scenario 1, where this is a net cost of purchasing reinsurance) versus when the CSM is positive (referred to as Scenario 2, where there is a net gain of purchasing reinsurance). Both scenarios assume that the risk of non-performance of the reinsurer is negligible.

**Table 6.2: Illustrative example of the CSM for a Reinsurance Contract**

| | Scenario 1 | Scenario 2 |
|---|---|---|
| Present value of cash inflows (recoveries) | (500) | (500) |
| Present value of cash outflows (premiums paid) | 750 | 450 |
| Risk adjustment for non-financial risk | (50) | (50) |
| Fulfilment cash flows | 200 | (100) |
| CSM | (200) | 100 |
| Reinsurance contract asset on initial recognition | - | - |

**6.32. At initial recognition, does the existence of reinsurance held impact the determination of the CSM and onerous contract testing of the gross policy liabilities?**

No, because key principles of IFRS 17 (paragraph B66(b)) are to separately recognise the underlying gross liabilities from any associated reinsurance held, determination of a CSM, and onerous contract testing of the direct contract liabilities. A loss is recognised on the initial recognition of the direct contract liabilities if they are an onerous group of

insurance contracts, while a gain is recognised on the reinsurance held covering those underlying contracts (see paragraphs 66A and 66B). In recognising this gain called "loss recovery component", the entity adjusts the CSM of the group of reinsurance contracts held. This is only applicable when the reinsurance contract held is recognised before, or at the same time as, the loss on the underlying direct contracts is recognised. If a reinsurance contract held is accounted for under the PAA, the same general approach is applied, however, the adjustments are made to the asset for remaining coverage rather than the CSM as the PAA does not have a CSM component (paragraphs 70A and 66c(ii)).

The loss recovery component should be treated in a manner consistent with the loss component of the group of underlying insurance contracts issued.

**6.33. How is the CSM on reinsurance held determined at subsequent measurement?**

The subsequent measurement of the CSM for reinsurance held accounted for under the GMA is performed in the same way as for direct contracts, except when the underlying gross contract(s) becomes onerous (or is already onerous and becomes more or less so) due to changes in fulfilment cash flows relating to future service. In such circumstances, the change in fulfilment cash flows for the reinsurance held also does not adjust the CSM of the reinsurance held under paragraph 66(c)(ii).

The requirement under paragraph 66(c) is that changes in reinsurance fulfilment cash flows resulting from a change in fulfilment cash flows relating to future service will not adjust the reinsurance CSM if the change does not adjust the CSM on the underlying group of contracts. This is the case if the underlying group of contracts is onerous.

In these circumstances, it is possible that the offsetting impact on the reinsurance held may exceed that on the underlying contracts due to accounting mismatches that could arise between the reinsurance and the underlying contracts (e.g., due to different contract boundaries or measurement approaches).

**6.34. How is the reinsurance CSM adjusted when the change in reinsurance fulfilment cash flows relates to an underlying group using PAA?**

When the gross liability for remaining coverage is determined using the PAA, there are different views for how to apply paragraph 66(c). Two such views are outlined below.

According to view A, only when the underlying group is onerous is the reinsurance CSM not adjusted. The argument for view A is as follows:

i. This is consistent with the rationale given by the IASB that where an underlying group becomes onerous due to changes in estimates for future service then the reinsurance CSM should not be adjusted, creating an offset (BC315);

ii. Estimates for future service only occur under the PAA when the group is onerous (see paragraphs 57-58); and

iii. Criteria for not adjusting reinsurance CSM under paragraph 66(c) are that there is a change in underlying fulfilment cash flows for future service that does not adjust the CSM of the underlying group. Such change only occurs under the PAA when

contracts are onerous, as otherwise underlying fulfilment cash flows are not measured under the PAA.

According to view B, the reinsurance CSM is never adjusted when the change in reinsurance fulfilment cash flows relates to an underlying group using the PAA even when the underlying cash flows are not onerous because:

i. there is no CSM under PAA, and thus any change to reinsurance cash flows relating to underlying group does not adjust the CSM of the underlying; and

ii. the criteria in paragraph 66(c) do not require an actual change in fulfilment cash flows for the underlying group. Rather, it requires a change in the fulfilment cash flows of the reinsurance contract relating to the underlying group and does not change the CSM of the underlying group.

**6.35. How is the grouping for the CSM impacted by the fact that reinsurance contracts may cover multiple years of underlying policies?**

IFRS 17 prohibits grouping contracts issued more than one year apart. Reinsurance contracts held are aggregated differently from the underlying contracts (paragraph 61).

In particular, reinsurance contracts are treated as a separate portfolio from the underlying and are grouped based on the characteristics and inception dates of the reinsurance contract, not the underlying contracts.

The grouping of reinsurance contracts will require careful consideration when matching which adjustments to the CSM are restricted, as there may be multiple underlying groups and no one-to-one correspondence between contracts or benefits reinsured.

### Other Issues

**6.36. How is the CSM calculated for business combinations and transfers of insurance contracts at initial recognition?**

Unless the PAA for the liability for remaining coverage applies, on initial recognition, the CSM is calculated applying paragraph 38 for acquired insurance contracts in a transfer or in a business combination within the scope of IFRS 3 and paragraph 65 for acquired reinsurance contracts held using the consideration received or paid for the contracts as a proxy for the premiums received or paid at the date of initial recognition.

If acquired insurance contracts issued are onerous, applying paragraph 47, the entity should recognise the excess of the fulfilment cash flows over the consideration paid or received as part of goodwill or gain on a bargain purchase for contracts acquired in a business combination within the scope of IFRS 3 or as a loss in profit or loss for contracts acquired in a transfer. The entity should establish a loss component of the liability for remaining coverage for that excess, and apply paragraphs 49 to 52 to allocate subsequent changes in fulfilment cash flows to that loss component.

See Chapter 11 – Business Combinations and Portfolio Transfers for a further discussion.

**6.37. How is the CSM calculated at transition?**

The measurement of the CSM or loss component under the full retrospective, modified retrospective, and fair value approaches at transition is discussed in Chapter 12 – Transition.

**6.38. What needs to be presented?**

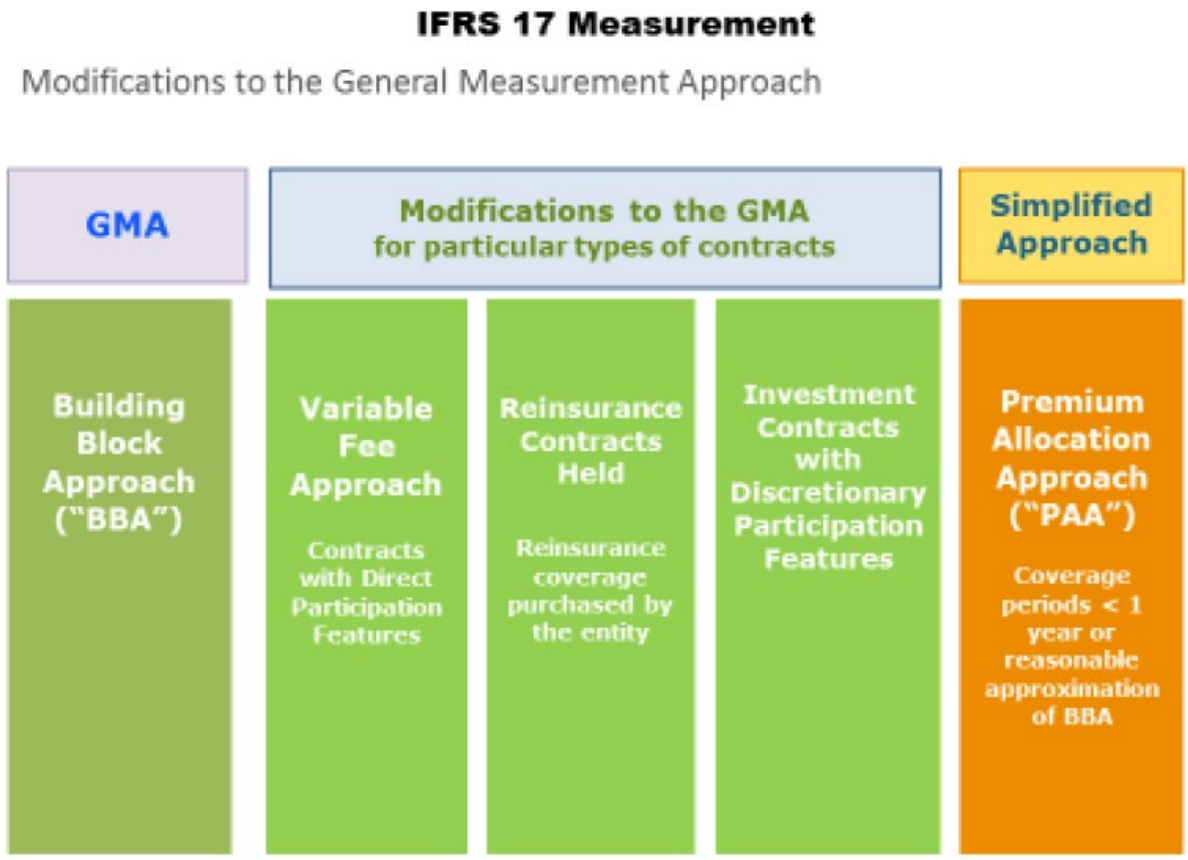
For contracts with direct participation features, if an entity chooses to adopt the financial risk mitigation option (see question 6.25), then the entity discloses the effect of that choice on the adjustment to the CSM that would otherwise have been made in the current period (paragraph B112).

See Section E - Presentation and Disclosure for a discussion on what to present relating to the CSM.

## Section B – Variations to the General Measurement Approach

This section includes three chapters that cover the variations to the General Measurement Approach (GMA). These are:

- The Premium Allocation Approach – Chapter 7
- Contracts with Participation Features and Other Variable Cash Flows – Chapter 8
- Reinsurance Contracts Held – Chapter 9




As discussed in Chapter 7 the PAA may be used whenever it provides a good approximation to the GMA liability for remaining coverage. It may also be used for groups of contracts with a coverage period of one year or less, regardless of whether it provides a good approximation. Many non-life insurance contracts satisfy this criterion. However, longer-term annual renewable contracts may also satisfy this criterion, if the contract boundary lies at the next renewal date.

As discussed in Chapter 8, the circumstances as to when the VFA may be used are not always straightforward especially for contracts with direct participation features which may well vary by jurisdictions. Although not insurance contracts, Investment Contracts with Discretionary Participation Features are in scope of IFRS 17 "provided they are issued by an entity that also

issues insurance contracts". If so, these contracts are measured in the same was as Contracts with Direct Participation Features.

Whilst reinsurance contracts issued by an Insurer / Reinsurer are accounted for using the GMA, there are variations as to how an entity accounts for reinsurance held. This is discussed in Chapter 9.

## Chapter 7 – Premium Allocation Approach

Before consulting this chapter, be sure to read the introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

### 7.A. What does this chapter address?

This Chapter considers the use of the Premium Allocation Approach (PAA) under IFRS17 including the criteria applying to an insurance contract which must be met for an entity to be able to choose the PAA, the measurement approach, and the differences between the PAA and the General Measurement Approach (GMA). The chapter focuses on the "*liability for remaining coverage*", where most of the differences between the PAA and the GMA are found, although minor differences for the "*liability for incurred claims*" are discussed. See also Section E – Presentation, and Disclosure.

### 7.B. Which sections of IFRS 17 address this topic?

Paragraphs 18, 53–59, 69–70, 72(c), B72(d), B72(e)(iii), B126–B127, and B133 provide guidance.

Paragraphs BC288–BC295 and BC301 also provide background on this topic.

### 7.C. What other IAA documents are relevant to this topic?

None

### 7.1. What is the premium allocation approach?

The PAA, which is set out in paragraphs 53-59, is a simplification of the GMA basis described in paragraphs 32–52. The IASB stated that there is only one model, the GMA, for measuring insurance contracts. Paragraph 53 states that an entity may use the PAA to measure the liability for remaining coverage only if it reasonably expects that the PAA would produce a measurement for a group of insurance contracts ("group" that would not differ materially from the one that would be produced applying the GMA or if the coverage period of each contract in the group is one year or less. (See question 7.2).

The PAA primarily applies to the liability for remaining coverage, the obligation that relates to the unexpired portion of the coverage period. The liability for incurred claims is measured under the GMA, which is discussed in Chapters 2 through 6, as modified by paragraph 59(b). (See question 7.13.)

The remainder of this chapter considers questions relevant to when and how the PAA may be used. In particular, see questions 7.10 and 7.11 for more information on the subsequent measurement of the liability for remaining coverage under the PAA.

### 7.2. When might an entity choose to use the PAA?

Whilst the PAA represents a simplification of the GMA, when an entity decides to implement the PAA will depend on the circumstances of each entity. For example, an entity may prefer to use the PAA where it can be implemented with fewer practical changes to existing systems and processes than might be required to develop an

approach to measurement and reporting of the CSM under the GMA. If not all of an entity's contracts are eligible for the PAA, then that entity may need to consider whether there are benefits to implementing the PAA for eligible contracts and developing an alternative approach to implementing the GMA for other contracts or whether to implement the GMA for all contracts.

The PAA may allow more straightforward reporting of the groups to which it is applied than the GMA. Again, the entity may want to consider this fact from the perspective of the transparency of information provided to users and in the context of the information provided if the GMA is applied to other groups.

The PAA is similar to the unearned premium approach used by many entities for reporting unexpired coverage under IFRS 4, local GAAP and / or regulatory reporting for short duration contracts. However, the PAA is not the same as some unearned premium (UEP) approaches, and adjustments may be required. One of the most important differences is that the PAA is net of acquisition expenses (unless the option in 59(a) is applied), while UEP approaches are typically gross of acquisition expenses (with an offsetting Deferred Acquisition Cost Asset). Another difference is that the PAA uses received premiums, while UEP approaches typically use written premiums. This may mean that the liability for remaining coverage under IFRS 17 will be lower than UEP measures under IFRS 4. (See question 7.9.)

Considerations for entities in deciding whether to use the PAA might include, for example, the extent to which existing and potential future contracts are eligible for the PAA, the extent to which existing systems and processes support reporting the PAA for eligible contracts, and the additional resources and costs that may be required to implement the GMA compared with PAA.

### 7.3. What are portfolios of insurance contracts ("portfolios") and groups of insurance contracts ("groups")?

Portfolios and groups, which are both defined terms in Appendix A of IFRS 17, are related to the level of aggregation and important in decision-making about the use of the PAA. See Chapter 1 – Classification of Contracts and Chapter 5 – Level of Aggregation.

### 7.4. When can the PAA be applied?

The PAA can be applied if the conditions in paragraph 53 are met. Paragraph 53 states:

*An entity may simplify the measurement of a group of insurance contracts using the premium allocation approach set out in paragraphs 55–59 if, and only if, at the inception of the group:*

*a) the entity reasonably expects that such simplification would produce a measurement of the liability for remaining coverage for the group that would not differ materially from the one that would be produced applying the requirements in paragraphs 32–52; or*

*b) the coverage period of each contract in the group (including coverage arising from all premiums within the contract boundary determined at that date applying paragraph 34) is one year or less.*

While the PAA is primarily for groups of short-duration contracts, it is allowed whenever it provides a materially equivalent measure (in this chapter, referred to as a "reasonable approximation") to the GMA liability for remaining coverage (paragraph 53(a)). The use of the PAA is, however, qualified by paragraph 54 (see question 7.5).

Paragraph 53(b) allows the PAA to be used for groups with a coverage period of one year or less regardless of whether the PAA provides a reasonable approximation. The length of the coverage period depends on the contract boundary (see question 7.8). Many non-life insurance contracts satisfy this criterion. Longer-term annual renewable contracts may also satisfy this criterion if the contract boundary lies at the next renewal date.

Use of the PAA is optional for an entity. The GMA can always be used even where the PAA is allowed. The PAA was introduced mainly to provide a simplified approach for non-life insurance contracts and short-duration contracts more generally. The PAA might be suitable for many single premium contracts (e.g., personal motor insurance and group health insurance) and may also be suitable for regular-premium contracts (e.g., annual renewable term life insurance) provided each premium is commensurate with the risk for the corresponding period of coverage. For more complex contracts, the PAA may not prove simpler in application than the GMA, particularly if the time value of money is allowed for.

Another consideration for the use of the PAA is consistency. In order to use the PAA for as many contracts as possible, an entity writing non-life insurance contracts may choose to conduct additional testing to determine if the PAA can approximate the GMA. There may be advantages for an entity to use consistent reporting of its whole business and remove the additional burdens of measurement under the GMA in the pre-claims period (such as the CSM and the more detailed disclosure requirements of the GMA). Conversely, an entity writing life insurance contracts may prefer to use the GMA rather than the PAA, even for simpler contracts, for consistency with how most of its contracts will be measured and presented.

Use of the PAA is an accounting policy choice and therefore subject to IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors if the entity decides to change from the PAA to the GMA (or vice versa) for eligible groups.

### 7.5. When is the PAA not allowed?

The PAA cannot be applied in circumstances outlined in paragraph 54, which states:

> *The criterion in paragraph 53(a) is not met if at the inception of the group an entity expects significant variability in the fulfilment cash flows that would affect the measurement of the liability for remaining coverage during the period before a claim is incurred. Variability in the fulfilment cash flows increases with, for example:*

(a) *the extent of future cash flows relating to any derivatives embedded in the contracts; and*

(b) *the length of the coverage period of the group of contracts.*

The PAA may have a greater risk of not producing a reasonable approximation to the GMA for groups whose coverage period is greater than one year. The following table provides a non-exhaustive list of examples where the PAA might not provide a reasonable approximation of the GMA.

| **Scenario** | **Reasoning** |
|---|---|
| Patterns of the expected incurred claim costs and the release of the risk adjustment for non-financial risk are significantly different from each other during the coverage period. | The PAA reduces the liability for remaining coverage in line with the pattern of insurance service expenses, while the GMA considers the impact of both in the relevant building blocks potentially leading to significant differences in the value of the liability for remaining coverage under the PAA versus the GMA over the coverage period. |
| The pattern of expected incurred claim costs is highly uneven, and the CSM is significant under the GMA. | The CSM under the GMA is released in accordance with the insurance service provided, which is based on coverage units for the duration of coverage. If the coverage provided by a contract is the same over the coverage period, then the CSM would be expected to be amortised evenly for each coverage period. For the PAA, an uneven pattern of expected incurred claims would result in an uneven pattern of premium allocated to each period. The size of the CSM would then determine the significance of this difference. |
| The longer the expected payout pattern is for the coverage and/or the higher the interest rate environment. | Significant variability in the cash flows may occur during the coverage period if the time value of money is a major component of the underlying building blocks of the GMA. For long payout patterns, even a small change in a low interest rate environment could significantly change the value of the liability for remaining coverage for the GMA. In a high interest rate environment, interest rates tend to be more volatile, and discount can be a significant portion of the liability for remaining coverage |

| | |
|---|---|
| | even for shorter tailed non-life insurance business. |
| In a high interest rate environment where there is no significant financing component and the premium is due within a year of providing the relevant coverage. | In this situation, an entity is not required under the PAA to reflect the time value of money in the liability for remaining coverage but would be required to do so under the GMA. |
| Where there is significant financing component. | In this situation, an entity is required under the PAA to reflect the time value of money in the liability for remaining coverage using a discount rate locked in at initial recognition. The GMA with the current discount rate may produce a significantly different amount for the liability for remaining coverage from the PAA. |
| There is a significant non-separable investment service or other non-separable non-insurance component to the contract, or there is a significant profit-sharing component. | These are complications which the PAA was not designed to handle and where the PAA might not be a reasonable approximation of the GMA. |
| The cost of any derivatives embedded in the contract is significant. | Paragraph 54(a) refers to embedded derivatives in the cash flows as an example of where variability in the fulfilment cash flows could be significant.<br><br>These are complications that the PAA was not designed to handle and where the PAA might not be a reasonable approximation of the GMA. |
| Coverage is deferred. | While the PAA might require the liability for remaining coverage to accrete interest, the longer the deferral period, the greater the mismatch is likely to occur between the underlying building blocks of the GMA and the PAA's liability for remaining coverage. The GMA will continue to update expectations of future cash flows, while the PAA will only adjust for changes in the timing for incurred claims in the coverage period if facts and circumstances change (see paragraph B127). |
| Longer duration contracts generally. | For many reasons already highlighted, the longer the contract, the greater the variability |

| | |
|---|---|
| | might be in the projected fulfiment cash flows under the GMA. |
| Contracts with level expected incurred claims and non-level policy administration and maintenance expenses. | The PAA would allocate the premium evenly over the contract period, while the GMA would recognise the non-level nature of the policy administration and maintenance expenses in the fulfilment cash flows. |

**7.6. For contracts whose coverage period is greater than 12 months in length, is it necessary to test whether the PAA is an approximation of the GMA?**

IFRS17 does not explicitly require a test to demonstrate that the PAA is an approximation of the GMA. However, relevant stakeholders (such as an entity's auditors) might expect the entity to justify its use for groups which contain contracts with more than 12 months coverage. The justification required depends on the circumstances, although paragraph 54 suggests that the criterion is evaluated only at inception looking at "*significant variability in the fulfilment cash flows that would affect the measurement of the liability for remaining coverage during the period before a claim is incurred.*"

For single premium contracts that run for only a few months more than a year, it may be sufficient to demonstrate that there is no obvious reason why the PAA would not be a reasonable approximation to the GMA over the coverage period.

In some simple circumstances, it may be possible to demonstrate mathematical equivalence between the PAA and the GMA. For example, this may be the case for single premium contracts if the expected incurred cost is level over the coverage period, the risk adjustment for non-financial risk is a flat percentage of the future cash flows, and the PAA reflects the time value of money.

For a longer-term group of single premium contracts, it may be desirable to perform a few sample calculations on both bases (i.e., PAA and GMA) in order to confirm similar results for the liability for remaining coverage.

Where there are future premiums or any other features that may indicate that the use of the PAA could be questionable (see question 7.5), it may be desirable to undertake more exhaustive testing. If such testing is unduly laborious, it may be an indication that the PAA is not appropriate for use.

If limited testing does not clearly indicate that the PAA is a reasonable approximation and PAA presentation is strongly preferred for such reasons as consistency with the rest of an entity's business, it may be necessary to undertake parallel calculations to confirm a reasonable approximation.

**7.7. When is a group recognised?**

The recognition criteria for groups under the PAA are the same as for the GMA. Paragraph 25 states:

*An entity shall recognize a group of insurance contracts it issues from the earliest of the following:*

*a. the beginning of the coverage period of the group of contracts;*

*b. the date on which the first payment from a policyholder in the group becomes due; and*

*c. for a group of onerous contracts, when the group becomes onerous."*

The first criterion is consistent with how entities in some jurisdictions that write short duration contracts currently recognise contracts under local GAAPs and IFRS 4.

### 7.8. What is the contract boundary?

The contract boundary is defined by paragraph 34 and discussed in Chapter 1 – Classification of Contracts.

The significance of the contract boundary in the context of the PAA lies in whether the contract has a coverage period of one year or less and is therefore automatically eligible for the PAA. For many non-life insurance contracts, neither the insurer nor the insured is obliged to renew, so the contract boundary is clear. Note that the coverage period can differ from the contract boundary at the inception. It is the coverage period that is considered in 53(b). See question 6.19.

The situation is rather less clear for compulsory insurances, where the right of the insurer to set a premium that fully reflects the risk is compromised in certain jurisdictions.

In cases of doubt, the actuary may seek guidance from the entity's technical accounting group to reach a consensus on the issue.

### 7.9. What is the initial measurement approach to the liability for remaining coverage?

The initial measurement under the PAA is set out in paragraph 55(a), which states:

*(a) on initial recognition, the carrying amount of the liability is:*

*i. the premiums, if any, received at initial recognition;*

*ii. minus any insurance acquisition cash flows at that date, unless the entity chooses to recognise the payments as an expense applying paragraph 59(a); and*

*iii. plus or minus any amount arising from the derecognition at that date of the asset or liability recognised for insurance acquisition cash flows applying paragraph 27.*

Under paragraph 59(a), if the coverage period is 12 months or less for each contract in the group at initial recognition the entity "may choose to recognise any insurance acquisition cash flows as expenses when it incurs those costs." This may cause a material difference between the PAA and the GMA for the liability for remaining coverage, which is why it is only permitted when the coverage period is less than 12 months for each contract in the group and the safe harbour election of the PAA can be made.

An important change with IFRS 17 is that insurance revenue is based on premiums received rather than premiums written. Caution is needed to avoid double counting or omission in accounting balances (e.g., premiums due but not received).

For non-life insurance business on a single premium basis with the initial recognition when the premium is due, if the option in paragraph 59(a) is not taken, the overall effect is that of an unearned premium net of acquisition expenses. Instead of an initial unearned premium (UEP) equal to the written premium less an initial deferred acquisition cost equal to the deferrable acquisition costs ("DAC"), the initial UEP is effectively net of acquisition costs, and there is no DAC asset.

If the option discussed in paragraph 59(a) is taken, the initial liability for remaining coverage is equal to the premium received with no DAC. The effect of this is that the liability is greater than under IFRS 4 approaches, where acquisition costs are deferred.

The PAA does not capture any expectation of policy cancellations. If cancellations are significant, the liability for remaining coverage could be overstated, or for contracts with a coverage period of greater than 12 months, the PAA may not be an appropriate approach.

**7.10. What is the subsequent measurement approach to the liability for remaining coverage?**

The subsequent measurement under the PAA is set out in paragraph 55(b), which states:

*(b) at the end of each subsequent reporting period, the carrying amount of the liability is the carrying amount at the start of the reporting period:*

*(i) plus the premiums received in the period;*

*(ii) minus insurance acquisition cash flows; unless the entity chooses to recognise the payments as an expense applying paragraph 59(a);*

*(iii) plus any amounts relating to the amortisation of insurance acquisition cash flows recognised as an expense in the reporting period; unless the entity chooses to recognise insurance acquisition cash flows as an expense applying paragraph 59(a);*

*(iv) plus any adjustment to a financing component, applying paragraph 56;*

*(v) minus the amount recognised as insurance revenue for coverage provided in that period (see paragraph B126); and*

*(vi) minus any investment component paid or transferred to the liability for incurred claims.*

As set out in paragraph B126, insurance contract revenue is recognised in each accounting period;

*a) on the basis of the passage of time; but*

*b) if the expected pattern of release of risk during the coverage period differs significantly from the passage of time, then on the basis of the expected timing of incurred insurance service expenses*.

In practice, it is possible to turn this procedure around and do a prospective, rather than a retrospective, calculation. If the group is not onerous, the PAA liability for remaining coverage is the (present) value of future revenue (less future premiums). For single premium contracts where future revenue is pro-rata (see question 7.12) and discounting can be ignored, acquisition costs are expensed, and there are no investment components, it may be easier to think in terms of unearned premiums and calculate premium revenue as unearned premiums at the start of the period, plus premiums received, minus unearned premiums at the end of the period, similar to current accounting practice.

Onerous contract liabilities and the circumstances under which the adjustment for the time value of money is required are discussed in questions 7.14 and 7.15.

**7.11. What acquisition expenses are used in the initial measurement?**

*"Insurance acquisition cash flows"* is a term defined in Appendix A of IFRS 17 and is used in Paragraph 59(a). They include commissions, underwriting costs, and contract set up expenses. For each group, all of these expenses must be directly attributable to the portfolio to which the group belongs. See Chapter 2 – Estimates of future cash flows.

If the option under paragraph 59(a) is elected, insurance acquisition cash flows would not be included in the initial measurement of the liability for remaining coverage.

**7.12. How is revenue recognised for subsequent measurement periods?**

As per question 7.10, revenue recognition under the PAA is specified in paragraph B126.

In practice, unless there are particular reasons to expect an uneven pattern, a good starting point might be a pro-rata assumption, modified to the extent demanded by credible experience. There is an inherent tension between using the broadest possible portfolio to maximise credibility and defining portfolios more narrowly to better reflect experience variations. The best balance is a matter of judgement.

There is also the question of what does "differs significantly from the passage of time" mean? This expression is not defined by IFRS 17, although the term "significant" is often used in accounting frameworks to relate that something has more than a remote likelihood of causing a misstatement. "Significant" appears to be a lower threshold than something that is "material", which is an accounting concept that refers to the impact that omitting, misstating, or obscuring information could reasonably be expected to have on the users of the financial statement.

For example, the storm damage component of the premium for a home-owners policy in Queensland, Australia, where cyclone season typically falls between November and April, would differ significantly from the passage of time. But other perils insured under the policy may have no such pattern or even offsetting patterns.

**7.13. How should the liability for incurred claims be measured for contracts measured under the PAA?**

The PAA generally uses the measurement approach for the liability for remaining coverage under the GMA.

However, there are minor simplifications that apply when measuring and presenting the liability for incurred claims if the group of contracts is initially measured under the PAA.

First, the entity is not required to adjust future cash flows for the time value of money and the effect of financial risk if those cash flows are expected to be paid or received in one year or less from the date the claims are incurred (see paragraph 59(b)).

Secondly, the GMA allows for an entity to elect to lock-in interest rates for purposes of recognising finance income or expenses over the life of a contract, with changes in market rates going through Other Comprehensive Income ("OCI"). Based on paragraphs B72(e)(iii) and B133, an entity that has used the PAA for measuring the liability for remaining coverage and wishes to lock-in discount rates shall do so based on the incurred date of the claim liabilities and not the initial contract recognition date as under the GMA. For practical purposes of implementation, one way to do this is to lock in a discount rate for each group based on the average insured event date of a period (quarterly or annual). This could be justified if the average claim size is assumed to be uniformly distributed over the period.

### 7.14. When and how should an onerous contract liability be recognised?

Onerous contracts, in the context of the PAA, are the subject of paragraphs 18 and 57, which state:

> 18 *For contracts issued to which an entity applies the premium allocation approach (see paragraphs 53–59), the entity shall assume no contracts in the portfolio are onerous at initial recognition, unless facts and circumstances indicate otherwise. An entity shall assess whether contracts that are not onerous at initial recognition have no significant possibility of becoming onerous subsequently by assessing the likelihood of changes in applicable facts and circumstances.*
>
> 57 *If at any time during the coverage period, facts and circumstances indicate that a group of insurance contracts is onerous, an entity shall calculate the difference between:*
>
> *(a) the carrying amount of the liability for remaining coverage determined applying paragraph 55; and*
>
> *(b) the fulfilment cash flows that relate to remaining coverage of the group, applying paragraphs 33–37 and B36–B92. However, if, in applying paragraph 59(b), the entity does not adjust the liability for incurred claims for the time value of money and the effect of financial risk, it shall not include in the fulfilment cash flows any such adjustment.*

Referring to paragraph 18, unless there are facts and circumstances indicating that the portfolio is onerous, it is not necessary to assess whether any contracts are or may become onerous. The latter half of paragraph 18 indicates that the entity still needs to consider at inception whether to allocate the contracts in the portfolio to a group that has

no significant possibility of becoming onerous in subsequent periods or not, as described in paragraphs 16(b) and 16(c) based on the likelihood of the facts and circumstances changing during the coverage period.

Note that if the paragraph 59(a) option (to expense acquisition cash flows) is taken, the group would be less likely to be onerous or become onerous.

Contracts may be onerous at issue or may become onerous later during the coverage period. The wording "facts and circumstances" in this paragraph implies that an explicit test is not required. An explicit test is only needed when there is reason to believe that the group may be onerous. This is clearly a matter of judgement. Possible indicators that may inform the decision to conduct onerous contract testing include:

a. a group of contracts in the portfolio that is known to be onerous at initial recognition;

b. past losses in the portfolio;

c. aggressive underwriting or pricing;

d. unfavourable experience trends; and

e. unfavourable external conditions.

Groups of onerous contracts might also be identified by parallel fulfillment cash flows and PAA calculations. If a group is onerous, the excess of the fulfillment cash flows over the PAA liability for remaining coverage is recognised as a loss in the profit or loss (with a corresponding component established by increasing the liability for remaining coverage). See Chapters 2 through 6 for a discussion of fulfillment cash flows. The calculations are modified in accordance with paragraph 57(b) to exclude discounting, if the corresponding liability for incurred claims is, or would be, undiscounted in accordance with paragraph 59(b).

If at any time during the coverage period, facts and circumstances indicate that a group is onerous, it is necessary to recalculate the difference between the fulfillment cash flows valuation of the liability for remaining coverage and the PAA carrying amount (paragraph 57).

No loss component can arise for incurred claims, as these are not part of the liability for remaining coverage and are valued at current fulfilment value.

Onerous contracts are discussed further in Chapter 6 – Contractual Service Margin and Loss Component.

**7.15. When is an adjustment made to the liability for remaining coverage for the time value of money required, and how is the adjustment made?**

Adjustment for the time value of money is subject to paragraph 56, which states:

> *If insurance contracts in the group have a significant financing component, an entity shall adjust the carrying amount of the liability for remaining coverage to reflect the time value of money and the effect of financial risk using the discount rates specified in*

*paragraph 36, as determined on initial recognition. The entity is not required to adjust the carrying amount of the liability for remaining coverage to reflect the time value of money and the effect of financial risk if, at initial recognition, the entity expects that the time between providing each part of the coverage and the related premium due date is no more than a year.*

An adjustment is required where there is a "significant financing component" to contracts in a group. Discussion of "significant financing component" is found in paragraphs 60-61 of IFRS 15 Revenue from Contracts with Customers.

It is optional to adjust the liability for remaining coverage for the time value of money if the time between providing the relevant portion of insurance coverage and the due date for the corresponding premium is expected to be 12 months or less.

Normally, a significant financing component would occur if premiums are paid significantly in advance of coverage being provided. In this case, interest would be accreted on the liability for remaining coverage, and this would also increase the amount of insurance revenue recognized.

The discount rates to be used are the locked-in rates determined at initial recognition of the group of contracts. See Chapter 3 – Discount rates.

**7.16. If the entity elects to use OCI for changes in interest rates in subsequent measurement periods for the liability for incurred claims, what is the locked-in discount?**

If electing the OCI option to minimise the volatility from changes in interest rates in profit or loss, the discount rate under the GMA is locked in at the date of recognition of the group. The IASB has allowed for a practical difference with the PAA in paragraph B72(e)(iii), whereby the discount rate for incurred claims is locked in based on the date claims are incurred. Effectively, for practical purposes, for many groups this would imply the locked-in discount rate would be based on the average incurred date of a period (e.g., quarterly or annual).

**7.17. How is ceded reinsurance dealt with under the PAA?**

Under paragraph 69, the PAA may be used for groups of reinsurance contracts held if they meet the same criteria as for direct insurance contracts. For proportional reinsurance, this may be the case if the group of underlying contracts is eligible for the PAA assuming the coverage is on a losses-occurring basis, where the reinsurer covers losses that occur for a contractually defined period of time. This is not necessarily true for proportional reinsurance on a policies or risks-attaching basis, where the reinsurer covers losses arising from policies written over a defined period of time. For example, if a reinsurance contract attaches policies over a one-year period and the attaching policies are also written over a one-year period, then the reinsurance contract would have a coverage period of two years and would not be automatically eligible for PAA based on coverage of one year or less.

Conversely, non-proportional reinsurance is typically written on a losses-occurring basis and may be eligible for the PAA even if the underlying direct contracts are not as long as

the coverage period is one year or less. Some non-proportional reinsurance is unlikely to qualify for the PAA. For example, aggregate covers with a term in excess of one year may not qualify if the pattern of risk amortisation differs significantly from the pattern of expected incurred claim costs. See question 7.5.

**7.18. How is assumed reinsurance dealt with under the PAA?**

Paragraph 3 indicates that IFRS 17 applies to "insurance contracts, including reinsurance contracts" an entity issues. IFRS 17 does not explicitly differentiate between the treatment of an issued insurance contract and an issued reinsurance contract. Consequently, the PAA may be used if the reinsurance contract meets the requirements of paragraph 53. It is worth noting again that a risks-attaching reinsurance contract, even with a contract length of one year, would not automatically be eligible for the PAA under paragraph 53(b), as the coverage provided would be in excess of one year, but it might still be possible to apply PAA.

Under a non-proportional reinsurance treaty, particularly some catastrophe covers (such as those covering aggregate losses), the pattern of risk amortisation may differ significantly from the pattern of expected incurred claim costs and therefore may not qualify for the PAA if the contracts have coverage periods in excess of one year.

**7.19. When and how does an entity bifurcate non-insurance features under the PAA?**

Non-insurance features are treated in the same way under the GMA and the PAA. Separation is discussed in questions 1.7 and 1.8. After separation, the insurance part of the contract is valued in the same way as a stand-alone contract.

**7.20. How are results presented under the PAA?**

See Section E – Presentation and Disclosure.

**7.21. How is transition to IFRS 17 treated if the entity will measure its liabilities using the PAA?**

See Chapter 12 – Transition. The PAA is not explicitly mentioned in Appendix C, which covers transition.

It will usually be straightforward to apply the PAA retrospectively in accordance with paragraph C4, because there is no separate identification of the risk adjustment for non-financial risk or the CSM. However, there may be some limitations related to internal data capture and systems especially for groups that have been in force longer than one year.

**7.22. How are contract modifications handled under the PAA?**

Contract modifications are the subject of paragraphs 72 and 73.

Paragraph 72 indicates that for some types of contract modification, "*an entity shall derecognise the original contract and recognise the modified contract as a new contract*." Paragraph 72 further notes that the "*exercise of a right included in the terms of a contract is not a modification*" and provides an exhaustive list of conditions under which the contract can be derecognised if, and only if, one or more of the conditions is met. These

conditions include a modification that would have changed the group to which the contract would have been assigned at inception or a modification that would have changed a group from being accounted for under the PAA to no longer being eligible for that simplification.

Paragraph 73 is written in terms of the GMA, indicating that if none of the conditions are met under paragraph 72 the "*entity shall treat changes in cash flows caused by contract modifications as changes in estimates of fulfilment cash flows by applying paragraphs 40-52.*" Paragraphs 40-52 detail subsequent measurement under the GMA. For contracts where the PAA is applied, guidance for subsequent measurement is in paragraph 55(b).

See also Chapter 14 – Contract Modifications and Derecognition

## Chapter 8 – Contracts with Participation Features and Other Variable Cash Flows

Before consulting this chapter, be sure to read the introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

### 8.A. What does this chapter address?

This chapter considers the recognition, measurement, and presentation of contracts with participation features ("participating contracts") for insurance contracts with direct participation features as well as for other types of participating contracts with cash flows subject to the discretion of the insurer or linked to indices. This chapter also addresses the criteria to be met for using the approach to be adopted for such contracts, which is known as the variable fee approach ("VFA"). The specific considerations on transition for participating contracts are covered in chapter 12 – Transition.

### 8.B Which sections of IFRS 17 address this topic?

Paragraphs 45, 48(b), 71, 72, 87, 89, 111-113, B27, B67-B71, and B101-B118 provide guidance on this topic. In particular, paragraphs B101-B118 provide key details on this subject.

Paragraphs BC165-BC170, BC171-BC174, BC237-BC257, BC264-BC269, BC276, BC365, and BC366 also provide background on the subject.

### 8.C What other IAA documents are relevant to this topic?

None

### General Issues

### 8.1. What are the types of participating contracts?

IFRS 17 defines different types of participation:

a) Insurance contracts with direct participation features, ("Direct Participating Contracts" or "DPCs"), which are defined in Appendix A and paragraph B101 and accounted for using a variation of the approach used for insurance contracts without direct participation features (i.e., sometimes called the Variable Fee Approach or VFA).

b) Investment contracts with discretionary participating features, which are defined in Appendix A and accounted for under IFRS 17 (with minor modifications) rather than IFRS 9 using a variation of the approach used for insurance contracts.

There are many different types of participating contracts in each jurisdiction that do not meet the definition of a) or b) above. Each type of insurance contract will need to be examined to determine if it meets the requirements to be a DPC (see question 8.3) or an Investment Contract with Discretionary Participation Features (DPF). For example, some contracts may have discretionary payments that depend on the return on assets but do not meet one of the other requirements to be defined as a DPC. Participating contracts

that do not meet all the requirements to be a DPC are measured as insurance contracts without direct participation features.

In assessing whether a contract is a DPC, careful consideration must be made of the impact of guarantees both in terms of guaranteed returns and guaranteed benefit amounts, as this will impact whether the requirement of paragraphs B101(b) and B101(c) are met (see paragraph B108). This means there may be insurance contracts within the same product type that fail to meet the definition for a DPC, while others meet the definition (e.g., where products with different levels of guarantees are available). It is possible that some contracts within a product type could be measured as DPCs, while others are measured as insurance contracts without direct participation features. The classification is made at initial recognition of a contract by the entity and never revised except in the case of a subsequent contract modification (see question 8.10). Each entity will have to make its own determination.

**8.2. Can a reinsurance contract be a DPC?**

No. A reinsurance contract, issued or held, is deemed to never meet the requirements to be a DPC and therefore is measured in the same way as an insurance contract without direct participation features (see paragraphs B109, BC248, and BC249). See also Chapter 9 – Reinsurance.

### Contracts with Direct Participation Features

**8.3. What is the definition of a Contract with Direct Participation Features?**

In Appendix A, a DPC is defined as:

*An **insurance contract** for which, at inception:*

*(c) the contractual terms specify that the **policyholder** participates in a share of a clearly identified pool of **underlying items**;*

*(b) the entity expects to pay to the **policyholder** an amount equal to a **substantial share** of the fair value returns on the **underlying items**; and*

*(c) the entity expects a **substantial proportion** of any change in the amounts to be paid to the **policyholder** to vary with the change in fair value of the **underlying items**.*

For a DPC, the coverage period implicitly includes the period when the contract provides investment services as well as insurance services.

IFRS 17 uses “fair value” in several places (such as the above definition of a DPC). If there is a need to determine the fair value, the determination follows the guidance of IFRS 13, as IFRS 17 does not provide guidance for determining the fair value (see chapter 10 – Fair Value).

### 8.4. What does an "*underlying item*" mean?

The requirement is that underlying items are clearly identified by the contract. The definition of underlying items is given in Appendix A and expanded upon in paragraph B106:

> *Items that determine some of the amounts payable to a policyholder. Underlying items can comprise any items; for example, a reference portfolio of assets, the net assets of the entity, or a specified subset of the net assets of the entity.*

The definition is not specific to DPCs only. Other contracts can also refer to underlying items. Some of the amounts payable to policyholders will vary according to variations in the value of the underlying items.

Paragraph B106 provides information about the composition of underlying items. This could be all or some of the net assets of the entity or a reference portfolio that does not necessarily need to include assets held by the entity.

Though Appendix A and paragraph B106 limit examples of underlying items to assets, both indicate that the pool of underlying items can comprise other items. It can be generally assumed that any item of determinable and variable value can be an underlying item (e.g., the underlying items could be a defined external index).

To refer to all underlying items that affect amounts payable to policyholder, IFRS 17 refers to the pool of underlying items.

### 8.5. What does "*clearly identified pool of underlying items*" mean?

As paragraph B101(a) refers to policyholders having a contractual share in the pool of underlying items, the pool of underlying items needs to be clearly identified and measurable to be effective.

Further guidance about the meaning of "clearly identified" can be found in paragraph B101(a), B105 and B106. Items in the pool of underlying items cannot be exchanged with retrospective effect. It is similarly not possible to withdraw fair value changes from the pool of underlying items once they have occurred by exchanging the respective items (e.g., at historical cost).

Considering the purpose of the condition, some believe that the requirement of "clearly identified" underlying items might not require a 100% ring-fenced fund. Very often, the returns on underlying items include the effect of cost allocations which are not necessarily fully contractually identified. According to those views, this is seen as tolerable if the volume of such unidentified amounts cannot affect the share of policyholders significantly. Ultimately, whether a contract is deemed to meet the criteria of a DPC is up to the entity and its auditors.

**8.6. What does a "contractual specification pf participating in a share of a pool of underlying items" mean?**

In order to meet the definition of a DPC, paragraph B105 requires that the link to underlying items be "enforceable", without precluding the existence of the entity's discretion to vary the amounts paid to policyholders. Enforceability (paragraph 2) is a matter of law. This can be contractual (contracts need not be written and can be implied by "an entity's customary business practices") and includes terms imposed by external parties, such as law or regulation. Enforceability cannot be assumed to apply for all rights and obligations within a contract. In some cases, the policyholder or another entity (e.g., a regulatory authority in lieu of the policyholder) is able to force the insurer to provide the policyholder a specific share of the pool of underlying items, while the specific share which is enforceable may depend on the specific value of the pool of underlying items or its movements.

**8.7. Can profits from portfolios of certain insurance contracts owned by participating contracts qualify as underlying items?**

This will depend on the nature of those profits and the features of the insurance contracts. The definition of an underlying item and of the criterion in paragraph B101(a) does not exclude this possibility.

**8.8. What are some examples of situations that do not meet the requirements for a clearly identified pool of underlying items?**

The following examples are set out in paragraph B106 as not meeting the requirements for a clearly identified pool of underlying items:

*a) an entity can change the underlying items that determine the amount of the entity's obligation with retrospective effect; or*

*b) there are no underlying items identified, even if the policyholder could be provided with a return that generally reflects the entity's overall performance and expectations, or the performance and expectations of a subset of assets the entity holds. An example of such a return is a crediting rate or dividend payment set at the end of the period to which it relates. In this case, the obligation to the policyholder reflects the crediting rate or dividend amounts the entity has set, and does not reflect identified underlying items.*

This latter example would exclude some universal life and participating contracts from qualifying as DPCs if the credited rate or dividend payments are based on something other than a share of a clearly identified pool of underlying items. Note these are just examples, and there may be other items that do not meet the requirements for a clearly identified pool of underlying items.

**8.9. What does "*a substantial share or substantial portion*" mean?**

IFRS 17 does not specifically define what "*substantial*" means. In paragraph B101(b), the requirement is that the policyholder shares in a "*substantial share of the fair value returns on the underlying items*", and in paragraph B101(c), a "*substantial proportion*" of the

amounts paid to policyholders is expected to vary with the fair value of the underlying items.

The outcome of this requirement is that negative as well as positive impact of the fair value returns are shared.

Also, the criterion set out in paragraph B101(c) would not be met for contracts where the degree of policyholder participation is limited (e.g., contracts where minimum guarantees mean that the returns to policyholders are based on expectations at outset, largely fixed in nature, and do not vary with the underlying items).

The criteria in paragraphs B101(b) and B101(c) are further clarified in paragraph B107. The assessment is not made on a period-by-period basis but rather over the duration of the insurance contract and "*on a present value probability-weighted average basis, not a best or worst outcome basis*" (see paragraph B107(b)(ii)).

**8.10. When does the assessment of whether a contract meets DPC requirements take place?**

The assessment takes place at initial recognition and is not repeated at any subsequent reporting period. Therefore, insurance contracts that originally had sufficient pass-through expectation, but where minimum guarantees subsequently become much closer to being in the money, remain DPC if they qualified as such at initial recognition.

However, if the contract is subject to a contract modification which, if made at or before that assessment, would have changed the assessment made, then the original contract is de-recognised, and a new (modified and reassessed) contract is recognised. (See Chapter 14 – Contract Modifications and Derecognition.)

Also, at transition to IFRS 17, if the fair value or modified retrospective approach is used, there may be circumstances where the assessment takes place at transition. See questions 12.34 and 12.41

For other special considerations, see Chapter 11 – Business Combinations and Portfolio Transfers and Chapter 12 – Transition.

**8.11. What is the conceptual basis for measuring DPCs?**

Normally, an entity benefits directly from all of the success (i.e., the surplus) in fulfilling a contract applying its own resources. The entity owns the resulting net assets. In the case of DPCs, a portion of that surplus belongs to policyholders. The contract defines the mechanism for determining the entity's share of that surplus.

For these contracts, the entity's share has the character of a contractual fee to be charged by the insurer to the surplus, which may be similarly variable as the surplus is (i.e., a variable fee). With that understanding, the surplus is owned by the policyholders except for the accumulation of a contractually defined fee.

Accordingly, the return on the pool of underlying items is not to be presented in that period as income but as remuneration for the entire services provided under the contract. Any such remuneration is to be allocated to periods as insurance revenue when the services are provided. Therefore, any change in the expectation of that contractual fee

adjusts the Contractual Service Margin ("CSM"), rather than the profit and loss account accordingly. This additional adjustment of the CSM is the key difference between the measurement of DPCs and other contracts under IFRS 17. Profits of DPCs are recognised in line with the provision of service rather than presented as surplus earned, be it on a statutory or fair value measurement basis.

The IASB expanded that concept to cases where policyholders participate only in parts of the surplus (e.g., only in investment returns exceeding minimum interest guarantees) or even cases where the pool of underlying items is an external index (e.g., a stock index) not directly affecting the insurer financially. In such cases, where the policyholder's benefits are not based directly on assets held by the insurer, earnings may prove to be volatile, the extent of which will depend on the terms of the policy.

The detail of this subsequent measurement is set out in paragraphs B110-B114 with further comments in paragraphs BC238-BC247.

Unlike insurance contracts without direct participation features for the CSM, "*all the adjustments are measured using current discount rates*. (see paragraph B113(a)).

The different adjustments to the CSM do not have to be identified separately (see paragraph B114).

Note that insurance contracts that meet the definition of a DPC would normally not be eligible to use the Premium Allocation Approach ("PAA"), which is described in Chapter 7 – Premium Allocation Approach.

**8.12. How do DPCs work on initial recognition?**

On initial recognition, the approach for DPCs is identical to the approach used for insurance contracts without direct participation features. Fulfilment cash flows and a CSM are determined in the same manner as set out in paragraphs 32-39. (See Chapter 2 – Estimates of Future Cash Flows and Chapter 6 – Contractual Service Margin and Loss Component.)

**8.13. What discount rate is used for measurement?**

There is no specific guidance for discounting of DPCs. The guidance applicable for any cash flows that vary based on the returns on underlying items applies, which is discussed in Chapter 3 – Discount Rates. This applies to both initial measurement and subsequent measurement.

**8.14. How are DPCs measured subsequently?**

Fulfilment cash flows for DPCs are determined in the same manner as for contracts without direct participation features. The special measurement requirements for DPC only affect the CSM, as follows:

a. The CSM is adjusted for the change in the entity's share of the fair value of the underlying items (see paragraphs 45(b) and B112) except to the extent that risk mitigation is applied (see paragraph B115 and question 8.16). This additional

adjustment to the CSM does not have to be identified separately from the generally applicable adjustments (paragraph B114).

b. There is no explicit accretion of interest on the CSM, as this is implicit in (a).

c. The adjustment for changes in fulfilment cash flows that do not vary based on the returns on underlying items is measured using current discount rates (see paragraph B113(a)) rather than locked-in discount rates.

d. The adjustment for changes in fulfilment cash flows that do not vary based on the returns on underlying items includes the change in the effect of the time value of money and financial risks not arising from the underlying items (see paragraph B113(b)) except to the extent that risk mitigation is applied (see paragraph B115 and question 8.15).

e. The cost of providing investment-related services is included in the determination of coverage units when releasing the CSM.

More information on subsequent measurement is set out in paragraphs B110 to B114 with further comments in paragraphs BC238 to BC249.

**8.15. What is the additional adjustment of the CSM for DPCs?**

The CSM of contracts without direct participation features is not adjusted for changes in the estimate of fulfilment cash flows due to financial risk rather it is based on the locked in rate from inception. For contracts with direct participation features, changes of the fulfilment cash flows due to financial risk, even if not related to future service, also adjust the CSM but measured applying the current interest curve rather than the locked-in one (see paragraph B113 (a)).

Changes in the fulfilment cash flows that do not vary based on the returns on underlying items consist of two categories. Paragraph B113b) states:

> *the change in the effect of the time value of money and financial risks not arising from the underlying items; for example, the effect of financial guarantees. These relate to future service and, applying paragraph 45(c), adjust the contractual service margin...*

In paragraph B113(a), all other changes in estimates of the fulfilment cash flows that do not vary based on the returns on underlying items apart from those in B113(b) are treated in the same manner as insurance contracts without direct participation features and hence

> *An entity shall apply paragraphs B96–B97, consistent with insurance contracts without direct participation features, to determine to what extent they relate to future service and, applying paragraph 45(c), adjust the contractual service margin.*

**8.16. How does risk mitigation such as hedging impact the measurement of DPCs?**

If risk mitigation is used, then for DPCs the entity can choose to put some or all of the changes in the entity's share of the underlying items due to the effect of the time value of

money and financial risk, or the paragraph B113(b) component of the variable fee, through profit or loss instead of the CSM. The entity's share of the underlying items can be mitigated by either derivatives or reinsurance contracts held. The effect on the variable fee can also be mitigated using non-derivative financial instruments measured at fair value through profit or loss as well as by derivatives and reinsurance held. This is to remove accounting mismatches (paragraph B115).

This would allow the change in the fair value of the mitigating items (which goes through profit or loss) to be offset by an equivalent portion of the change in fulfilment liabilities that would otherwise adjust the CSM.

Requirements related to the application of paragraph B115 are set out in paragraph B116:

"*… an entity must have a previously documented risk-management objective and strategy for mitigating financial risk as described in paragraph B115.I In applying that objective and strategy:*

*a) an economic offset exists between the insurance contracts and the derivative, non-derivative financial instrument measured at fair value through profit or loss, or reinsurance contract held (i.e., the values of the insurance contracts and those risk mitigating items generally move in opposite directions because they respond in a similar way to the changes in the risk being mitigated). An entity shall not consider accounting measurement differences in assessing the economic offset.*

*b) credit risk does not dominate the economic offset."*

Also, paragraph B117 requires paragraph B115 to be applied consistently in each reporting period.

Finally, if the conditions required to use this approach are no longer met, then the approach cannot be used from that date, however, previous periods are not adjusted retrospectively (see paragraph B118).

The risk mitigation option has no effect if the hedging items are themselves part of the pool of underlying items (e.g., if policyholders share in the entire surplus of the entity and the derivatives are held by the entity).

**8.17. What happens when a DPC is modified?**

If the terms of a contract are changed so that the insurance contract no longer meets the requirements for DPC (paragraph 72), the original contract is derecognised and a new contract recognised based on the modified terms. See chapter 14 – Contract Modifications and Derecognition.

**8.18. Are there any special requirements for a DPC on transition?**

There are specific requirements for DPC on transition. Some of the requirements differ from insurance contracts without direct participation features. See Chapter 12 – Transition.

## Investment Contracts with Discretionary Participating Features

**8.19. What is the definition of an "*investment contract with a discretionary participating feature*"?**

Appendix A provides the following definition:

*A financial instrument that provides a particular investor with the contractual right to receive, as a supplement to an amount not subject to the discretion of the issuer, additional amounts:*

*a. that are expected to be a significant portion of the total contractual benefits;*

*b. the timing or amount of which are contractually at the discretion of the issuer; and*

*c. that are contractually based on:*

*(i) the returns on a specified pool of contracts or a specified type of contract;*

*(ii) realised and/or unrealised investment returns on a specified pool of assets held by the issuer; or*

*(iii) the profit or loss of the entity or fund that issues the contract*.

The treatment of these contracts is covered in paragraph 71, and paragraph B27(a) confirms that these contracts, although not insurance contracts, are in the scope of IFRS 17 "*provided they are issued by an entity that also issues insurance contracts*".

**8.20. *What is an example of investment contracts' discretionary cash flows?***

One common example would be discretionary interest payments on a savings-type product if all conditions as outlined in question 8.19 are met.

**8.20 How are investment contracts with discretionary participation features measured?**

Investment contracts with discretionary participation features are subject to the same measurement considerations as insurance contracts with three modifications as described in paragraph 71:

- The date of initial recognition is the date the entity becomes party to the contract;
- The contract boundary is defined in terms of the entity's obligation to deliver cash; and
- The coverage units for release of the CSM reflect investment services.

Investment contracts with DPF often share many characteristics with insurance contracts with participation features and may share common underlying items. Investment contracts with DPF may also qualify as DPCs if they meet the conditions in paragraph B101.

## Other Types of Participating Contracts (Non-VFA)

**8.21. What are some other types of participating contracts?**

Universal life or participating insurance contracts where credited rates or dividends (e.g., bonuses) are established on a basis that is not linked to a clearly identified pool of underlying items are the most common type of participating contract that may be classified as Non VFA. For example, contracts where there is no enforceable sharing mechanism specified, so the dividend (bonus) can be adjusted to support performance on other contracts might not meet the requirements for a DPC. There are, however, a great variety of such contracts worldwide, and thus actuaries may need to provide support to the entity's assessment of the particular contract to determine whether it meets the requirements to be a DPC.

**8.22. How are discretionary cash flows and liabilities on those contracts measured?**

Such contracts are measured using the general measurement approach ("GMA") discussed in Chapters 2 through 6.

Future payments to the policyholder under the contract that are at the discretion of the insurer are included in the measurement of the contract if they are directly related to fulfilment of the contract and if they are within the contract boundary (paragraph B65). Normally in accounting, discretionary payments would be recognised only when the entity accepts an obligation for payment. Under IFRS 17, however, they are measured on an expected value basis anticipating the expected behaviour of the insurer regarding those future decisions. Special care might be needed if the inclusion of discretionary payments makes contracts onerous or more onerous, particularly if the insurer might have the ability to reduce the payment to eliminate the loss.

Any change in the discretionary element paid to policyholders relates to future service and adjusts the CSM. In order to assess if such a change has arisen, an expected basis for these discretionary payments is included in the fulfilment cash flows at inception (paragraph B98). The CSM is then adjusted for deviations from these expected cash flows subject to the following.

- Changes in these payments can arise as a result of changes in financial risk on that commitment, which do not adjust the CSM, and "*the effect of discretionary changes to that commitment*", which adjust the CSM (paragraph B99).
- If it is not possible to separately specify the commitment at inception and the discretionary element, then the commitment is regarded "*to be the return implicit in the estimate of the fulfilment cash flows at inception of the contract, updated to reflect current assumptions that relate to financial risk.*" (paragraph B100).

### When cash flows in one group (either a DPC or not) are impacted by cash flows in another group

**8.23. In what circumstances are cash flows in one group considered to be impacted by cash flows in another group?**

IFRS 17 recognises that off-setting effects between insurance contracts may arise in some circumstances and has a section on "*Contracts with cash flows that affect or are affected by cash flows to policyholders of other contracts*" (paragraphs B67-B70).

In such cases, the insurer usually reduces discretionary benefits to policyholders if losses from other contracts arise. Often, the ability to reduce (discretionary) benefits is a contractual right of the insurer, and it is at the entity's discretion which losses it may consider in determining the discretionary benefits. Therefore, the discretionary benefits are simply measured as expected to be paid taking into account any expected reduction for losses from other contracts.

Other types of "*mutualisation*" such as "*the effects of specific contractual terms to general risk diversification*" (paragraph BC171) are not included.

Since the measurement under IFRS 17 is based on groups, off-setting effects within groups are implicitly included in the measurement approach. Paragraphs B67-B70 discuss effects arising between groups. The important point for the fulfilment cash flows is not to double count any impacts. Payments that have been included in the cash flows of one group are not included in the cash flows of another.

These offsetting effects may not always eliminate the risk that contracts turn out to be onerous. That is the case if the insurer is not able to off-set the entire loss from contracts by reducing benefits otherwise payable to other contracts but needs to bear a part of the loss.

As in other areas, IFRS 17 does not prescribe the approach to allow for the benefit / impact of this off-setting. Different practical approaches are allowed. IFRS 17 does recognise that this practical approach may be at a higher level of aggregation than the individual groups. If this is the case, then a systematic and rational approach is used to allocate the effect of off-setting to individual groups. Groups are still subject to the annual grouping requirement just as for contracts with no such off-setting mechanism, though in some cases the effect of off-setting will reduce the impact of annual grouping (e.g., if sharing has the effect of equalising the profitability of groups issued in different years). For more discussion of the level of aggregation, see BC138 and BC139. While this is not part of the standard, BC 138 does acknowledge that it may not be necessary to methodologically restrict the groups to annual issues if the same result is obtained.

**8.24. How is the obligation measured if surplus currently earned is expected to be paid to future policyholders?**

In some systems, the entity has the discretion to pay participating benefits (i.e., distribute surplus) currently earned to future policyholders. The benefits can be paid even after the coverage period of some or all of the contracts generating that surplus is expired.

Paragraph B71 grants the simplification that once the contracts of the group generating the surplus have been derecognised and those future amounts can be measured collectively rather than separately for each group.

### Mutual Entities

**8.25. Is there any special accounting guidance for mutual entities?**

The precise nature of mutual entities varies widely. In some mutual entities, policyholders or subsets of policyholders may, in addition to holding a contract, also share in the residual interest of the entity (i.e., "*the most residual interest of the entity is due to a policyholder and not a shareholder*" (paragraph BC265)). However, there is no general rule that entities referred to as "mutual entities" actually grant a policyholder such a right.

The accounting treatment will depend on the exact facts and circumstances of the mutual entity in question in identifying the rights and obligations of the entity under the contract as required in paragraph 2.

This means that some policyholders will have two identities. The first, a policyholder of the mutual insurer / entity, and the second, an owner of the mutual entity / insurer. These two roles are considered separately (paragraph B16).

### The OCI Option

**8.26. What is the other comprehensive income ("OCI") option?**

Paragraph 87 states:

*The insurance finance income or expenses comprises the change in the carrying amount of the group of insurance contracts arising from:*

*a. the effect of the time value of money and changes in the time value of money; and*

*b. the effect of financial risk and changes in financial risk; but*

c. *excluding any such changes for groups of insurance contracts with direct participation features that would adjust the contractual service margin but do not do so when applying paragraphs 45(b)(ii), 45(b)(iii), 45(c)(ii) or 45(c)(iii). These are included in insurance service expenses.*

An entity can make an accounting policy choice between including the full amount of the insurance finance income or expense in profit or loss or disaggregating this amount between profit or loss and OCI using a systematic allocation of the expected total insurance finance income or expenses over the duration of the group for contracts without direct participation features (paragraph 88).

For contracts where financial risk has a substantial effect on the amounts paid to policyholders (i.e., most participating contracts), there is specific guidance for systematic disaggregation. The disaggregation eliminates accounting mismatches with income or expenses included in profit or loss on the underlying items held (paragraph 89).

In both cases, the balance of the amount included in profit or loss on disaggregation and the total amount of insurance finance income or expenses in the period is included in OCI (paragraph 90). The accounting policy choice as to whether to disaggregate insurance finance income or expenses is made at the portfolio of insurance contracts level and is made in conjunction with an assessment of the treatment of the portfolio of assets (paragraph B129):

**8.27. How does the OCI option apply to DPCs holding the underlying items?**

If an entity chooses to disaggregate insurance finance income or expenses for DPCs, where the entity holds the underlying items, in the profit or loss the insurance finance income or expenses on the liabilities is equal and opposite to the income or expenses included in profit or loss for the underlying items resulting in "the net of the two separately presented items being nil" (paragraph B134).

If the application of the OCI changes because the entity no longer owns the underlying items, the amount accumulated in OCI is included as a reclassification adjustment in profit or loss. This is based on the amount previously included and is not recalculated for the approach now applying, or the new assumptions. Paragraph B135 (a) states:

*i. if the entity had previously applied paragraph 88(b)—the entity shall include in profit or loss the accumulated amount included in other comprehensive income before the change as if the entity were continuing the approach in paragraph 88(b) based on the assumptions that applied immediately before the change; and*

*ii. if the entity had previously applied paragraph 89(b)—the entity shall include in profit or loss the accumulated amount included in other comprehensive income before the change as if the entity were continuing the approach in paragraph 89(b) based on the assumptions that applied immediately before the change.*

No restatement of prior periods is required (paragraph B135(b)).

**8.28. How does the OCI option apply for other participating contracts?**

For contracts for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to the policyholder but which are not DPC, the disaggregation is based on a systematic allocation of the expected total finance income or expenses over the duration of the group (see paragraph B130). The systematic allocation is based on characteristics of the contracts without reference to factors that do not affect the cash flows expected to arise under the contracts. In other words, if expected recognised returns on assets do not affect the cash flows of the contracts in the group, the impact of those returns is excluded (see paragraph B130(a)).

The systematic allocations are also such that over the duration of the groups the total amount recognised in OCI is zero. This means that when a contact matures the carrying amount of the group is equal to the amount measured using the systematic allocation (paragraph B130(b)).

The systematic allocation of the future cash flows can be determined in one of two ways as stated in paragraph B132(a):

*(i) using a rate that allocates the remaining revised expected finance income or expenses over the remaining duration of the group of contracts at a constant rate; or*

*(ii) for contracts that use a crediting rate to determine amounts due to the policyholders—using an allocation that is based on the amounts credited in the period and expected to be credited in future periods.*

The effective yield approach is described in the illustrative examples (IE 159):

> *Applying paragraph B132(a)(i), the entity uses a rate that allocates the remaining revised expected finance income or expenses over the remaining duration of the group of contracts at a constant rate (an 'effective yield approach'). The effective yield approach is not the same as the effective interest method as defined in IFRS 9 Financial Instruments Appendix A.*

If the financial assumptions remain the same through the years (i.e., no changes related to future cash flows), the calculated effective yield will remain the same. However, if the financial assumptions change, a revised effective yield will need to be calculated (see Paragraph B132). The amount going through the insurance finance income/expense in profit or loss will be calculated using this effective yield rather than the initial discount rate. The difference between this and the total impact will go through OCI.

The second of these is the crediting rate approach and is described in the illustrative examples (IE 165):

> *Applying paragraph B132(a)(ii), the entity uses an allocation based on the amounts credited in the period and expected to be credited in future periods (a 'projected crediting rate approach'). In addition, applying paragraph B130(b), the entity needs to ensure that the allocation results in the amounts recognised in other comprehensive income over the duration of the group of contracts totalling to zero. In order to do so, the entity calculates a series of discount rates applicable to each reporting period which, when applied to the initial carrying amount of the liability equals the estimate of future cash flows. This series of discount rates is calculated by multiplying the expected crediting rates in each period by a constant factor (K).*

Using the crediting rate approach might include the following steps:

1. Calculate the fair value of liabilities on current assumptions (in this example they increase when interest rates fall).
2. Solve for rates which "amortise" the difference between the new value and the original estimate in proportion to how interest is credited.
3. This scaling factor then scales the future outstanding crediting rates up through time. This results in the movements on the liability side closely matching the movements on the asset side.
4. In all cases, the OCI balance must be re-spread when conditions change, so that the outstanding OCI balance at the end is zero.

For the risk adjustment for non-financial risk, if the risk adjustment is also disaggregated, the systematic allocation used is consistent with the allocation of the future cash flows.

For the CSM, the systematic allocation uses the discount rate used to accrete interest (locked-in rate) (paragraph B132). For DPC, whether the entity holds the underlying items or not, the adjustment to the CSM according to paragraph 45(b) is disaggregated in line with the disaggregation of the respective policyholders' share.

### Presentation and Disclosures

**8.29. Are there any differences with respect to presentation for DPCs?**

There are no specific presentation requirements for DPCs. See Section E – Presentation and Disclosure.

**8.30. Are there any additional disclosures required for DPCs?**

For disclosures, an entity is required to explain the relationship between insurance finance income or expenses and the investment return on its assets (paragraph 110).

- The composition of the underlying items and their fair value is also disclosed (paragraph 111).
- If risk mitigation is used and the CSM is not adjusted for some changes in the fulfilment cashflows, the impact of this on the CSM is disclosed (paragraph 112).
- If the basis for disaggregation of insurance finance income or expenses is changed, then the period when the change occurred, the reason, any adjustments as a result, and the carrying amount of the contracts to which the change applied are disclosed (paragraph 113).

See also Section E –Presentation, and Disclosure.

## Chapter 9 – Reinsurance

Before consulting this chapter, be sure to read the introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

### 9.A. What does this chapter address?

This chapter provides background and suggested practice on the measurement of reinsurance arrangements that are considered reinsurance contracts in scope of IFRS 17. The note covers both reinsurance ceded (referred to as reinsurance "held" in IFRS 17) and reinsurance assumed (referred to as reinsurance "issued" in IFRS 17). As noted in paragraph 3, IFRS 17 is applicable to both reinsurance contracts held, and reinsurance contracts issued. For consistency with IFRS 17 terminology, reinsurance "held" and "issued" will be used in this note. Retrocession contracts are included in the definition of reinsurance contracts.

### 9.B. Which sections of IFRS 17 address this topic?

As noted in paragraph 4, all references in IFRS 17 that refer to insurance contracts also apply to reinsurance contracts held unless otherwise indicated by specific reference to reinsurance issued or as specified in paragraphs 60–70A for reinsurance held.

### 9.C. What other IAA documents are relevant to this topic?

None

### 9.1. When is IFRS 17 used to account for reinsurance contracts?

A reinsurance contract is an insurance contract where one entity (the reinsurer) takes on all or part of the insurance risks associated with insurance contracts issued by another entity. When an entity transfers risks associated with underlying insurance contracts to another entity it is known as reinsurance held (the IFRS 17 terminology for reinsurance ceded). When an entity receives risks associated with insurance contracts issued by another entity it is known as reinsurance issued (the IFRS 17 terminology for reinsurance assumed). Where there is significant insurance risk transfer, the reinsurance contract is considered as an insurance contract under IFRS, and IFRS 17 is applicable (paragraph 3). This applies to both reinsurance held and reinsurance issued.

IFRS 17 outlines the criteria to determine whether there is significant insurance risk transfer under the contract (see question 9.2 below). Where a contract fails these criteria, IFRS 17 does not apply.

### 9.2. What constitutes significant insurance risk transfer for reinsurance?

To determine if IFRS 17 is applicable, for each reinsurance arrangement that an entity has in place, an assessment needs to be made as to whether there is significant insurance risk transfer. The criteria are covered in detail in paragraphs B7-B23. See Chapter 1 – classification of contracts.

Under IFRS 17, an insurance contract is one under which one party accepts significant insurance risk, other than financial risk, from another party by agreeing to compensate the other party if a specified uncertain future event (the insured event) adversely affects the other party.

Under IFRS 17, paragraph B18 states *the insurance risk is significant if, and only if, an insured event could cause the insurer to pay additional benefits that are significant in any single scenario, excluding scenarios that lack commercial substance (i.e., have no discernible effect on the economics of the transaction). IFRS 17 specifically says this condition may be met even if the insured event is extremely unlikely or even if the expected (i.e., probability-weighted) present value of contingent cash flows is a small proportion of the expected present value of all the remaining contractual cash flows. Paragraph B19 goes on to state that a contract transfers significant risk only if there is a scenario that has commercial substance in which the issuer has a possibility of a loss on a present value basis*.

For reinsurance, the following considerations apply:

- Lapse, persistency or expense risk would not normally meet the criteria for insurance risk outlined above, *because the resulting variability in the payment to the policyholder is not contingent on an uncertain future event that adversely affects the policyholder* (paragraph B14). However, *if the entity mitigates its risk by using a second contract to transfer part of the non-insurance risk to another party, the second contract exposes the other party to insurance risk* (paragraph B15). Therefore, the assumption of lapse, persistency and expense risk can (if significant) meet the definition of an insurance contract (reinsurance contract issued). However, the transfer of those risks would not be a reinsurance contract held unless significant insurance risk is also transferred, since the exception applies only to the entity issuing the contract.
- Even if a reinsurance contract does not expose the issuer of the contract to the possibility of a significant insurance loss, the contract is still deemed to transfer significant insurance risk if it transfers substantially all of the insurance risk relating to the reinsured portions of the underlying insurance contracts (paragraph B19). Therefore, a reinsurance contract that meets this criterion can be considered as insurance contracts for both the entity issuing the contract and the entity that holds the reinsurance.
- • Contracts need not be written in the traditional form of an insurance contract or reinsurance contract for IFRS 17 to apply. Rather it is the nature of the event that triggers a payment that determines if IFRS 17 is potentially applicable to a contract. For example, contracts that cover catastrophic events such as weather events and earthquakes that cause losses that are specific to a party to the contract may meet the definition of insurance contracts or reinsurance contracts and be subject to IFRS 17 if the insurance risk is significant. However, where the losses to be reimbursed are not specific to a party to the contract, for example a unitized cover determined

by an index, this would not be considered insurance risk and therefore is not an insurance contract or reinsurance contract.

***The rest of this chapter is applicable only to reinsurance classified as insurance contracts under IFRS.***

**Reinsurance Held –** (Questions 9.3 – 9.17)

**9.3. How is reinsurance held presented in the IFRS statement of financial position and statement of financial performance?**

Where an entity has entered into reinsurance contracts to cede insurance risk associated with underlying insurance contracts (either direct insurance contracts or reinsurance contracts issued), the reinsurance held contracts are recognised and presented on the statement of financial position separately from the underlying insurance contracts (paragraph 78).

The measurement values of groups of reinsurance held contracts are aggregated at the portfolio level. These values are recognized and presented as portfolios of reinsurance contracts held that are assets and portfolios of reinsurance contracts held that are liabilities.

For the statement of financial performance, the income and expense from reinsurance held are shown separately from the expenses and income of the underlying insurance contracts (paragraph 82). An entity is also permitted to present the income and expense from a group of reinsurance contracts held as a single amount or separately as income and expense item (paragraph 86). Specifically, paragraph 86 states that

*An entity may present the income or expenses from a group of reinsurance contracts held (see paragraphs 60-70A), other than insurance finance income or expense, as a single amount; or the entity may present separately the amounts recovered from the reinsurer and an allocation of the premiums paid that together give a net amount equal to that single amount. If an entity presents separately the amounts recovered from the reinsurer and an allocation of the premium paid, it shall:*

*a) treat reinsurance cash flows that are contingent on claims on the underlying contracts as part of the claims that are expected to be reimbursed under the reinsurance contract held;*

*b) (b) treat amounts from the reinsurer that it expects to receive that are not contingent on claims of the underlying contracts (for example some types of ceding commissions) as a reduction in the premiums to be paid to the reinsurer;*

*(ba) treat amounts recognised relating to recovery of losses applying paragraphs 66(c)(i)–(ii) and 66A–66B as amounts recovered from the reinsurer; and*

*c) not present the allocation of premiums paid as a reduction in revenue.*

These requirements have implications for some common reinsurance features. Profit commissions would be deducted from revenue if not contingent on claims experience, or

included in claims if contingent on claims experience. Mandatory reinstatement premiums would be recognized as a reduction in claims.

**9.4. Does reinsuring insurance contracts impact the recognition of the underlying insurance contacts?**

No. Reinsurance does not impact the recognition of the underlying insurance contracts. As per paragraph 75, "when an entity buys reinsurance, it shall de-recognise the underlying insurance contract(s) when, and only when, the underlying insurance contract(s) is or are extinguished".

**9.5. Does reinsuring insurance contracts impact the measurement of the underlying insurance contracts on the IFRS balance sheet?**

Under IFRS 17, insurance contracts issued by an entity are measured on a gross of reinsurance basis. Estimates of the future cash flows of a group of underlying insurance contracts would be the same regardless of whether there is reinsurance held associated with these obligations.

For the risk adjustment of a group of underlying insurance contracts, the entity's approach to diversifying its risk exposure, including the potential use of reinsurance, could impact the gross risk adjustment. This does not necessarily imply a direct linkage between the gross risk adjustment on underlying insurance contracts and the risk adjustment related to these underlying contracts.

Other than a potential difference in the risk adjustment, the CSM of a group of underlying insurance contracts would also be the same regardless of whether there is reinsurance held associated with these obligations. Note that the converse is not true, as the CSM of reinsurance held contracts can be impacted by the measurement of the underlying insurance contracts if the underlying insurance contracts are onerous (see question 9.8).

**9.6. How are reinsurance contracts held measured?**

Except for contracts under the PAA, the measurement of reinsurance held follows the same GMA as for insurance contracts generally, and is represented by the fulfilment cash flows associated with the reinsurance held contract plus a CSM. In principle, the measurement of the fulfilment cash flows and CSM of reinsurance held is separately determined from the measurement of the same items of underlying gross insurance contracts, though there are some linkages (see questions 9.7 through 9.10).

With respect to the estimate of future cash flows, paragraph 63 requires consistency between the assumptions used in the measurement of the reinsurance contracts held and in the measurement of the underlying gross insurance liabilities (see question 9.9).

As well the fulfilment cash flows for reinsurance contracts held will need to reflect the possibility of non-performance by the reinsurer (see question 9.11).

With respect to the risk adjustment, a different definition of the risk adjustment is used for reinsurance contracts held that replaces the general definition used for insurance contracts (see question 9.10).

With respect to the CSM, there are specific additional considerations for reinsurance contracts held, including the possibility for the CSM to be both positive and negative, and a linkage between the measurement of underlying insurance contracts and the CSM on reinsurance contracts held in the case where the underlying contracts are onerous (see question 9.8).

**9.7. Does the asset or liability for reinsurance held have a CSM?**

Assuming the PAA is not being used, and the underlying insurance contracts covered are not onerous, a CSM is determined for reinsurance contracts held using a similar approach as for other insurance contracts. However, there is a key difference in that the CSM can both reduce the reinsurance held asset (i.e., present value of reimbursements from the reinsurance contract exceed the present value of reinsurance premiums) and therefore defer recognition of gain from the reinsurance contract, or reduce the reinsurance held liability (i.e., present value of reinsurance premiums exceeds the present value of reimbursements from the reinsurance contract) and therefore defer recognition of the cost from the reinsurance contract. In other words, in most circumstances, the CSM for reinsurance contracts held will defer the gain from, or the cost of, reinsurance contracts held.

This means that the concept of an 'onerous' reinsurance held contract does not exist (see paragraphs 29 (b), 61 and 65). For reinsurance contracts held, the concepts of 'profitable' and 'onerous' contracts are replaced with 'net gain' and 'net cost' of reinsurance contracts respectively. The rationale is that a net loss from the reinsurance contract would usually represent a commercial expense of purchasing reinsurance and would normally be spread over the period in which the service is received. As a consequence, there is no loss component associated with the 'net cost' reinsurance contracts held.

A key consideration specific to reinsurance held is that the CSM for reinsurance held can be impacted by the measurement of associated underlying insurance contracts when the underlying insurance contracts are onerous (see question 9.8).

**9.8. How is measurement (i.e., CSM) impacted when there is reinsurance held against a group of underlying insurance contracts that are onerous?**

Where an entity recognizes a loss on a group of underlying insurance contracts because the underlying insurance contracts are onerous, the entity is required to offset this by recognising a gain on reinsurance contracts held. The offset is made through adjusting the CSM on the reinsurance contracts held. A different approach is followed for losses on a group of underlying contracts at initial recognition of the underlying contracts versus losses, or reverses of losses, at subsequent measurement.

<u>Losses on a group of underlying contracts at initial recognition:</u> Where an entity recognises a loss on underlying insurance contracts because the underlying contracts are onerous at initial recognition, the entity simultaneously recognises a gain on the reinsurance contracts held by adjusting the CSM of the reinsurance contracts held. The quantum of the CSM adjustment is the loss recognized on the underlying contracts multiplied by the percentage of claims on the underlying contracts that the entity has

expects to recover from the reinsurance contracts held. If further contracts are subsequently added to this onerous group of underling contracts, this same approach is applied. (paragraphs 66(ba), 66A, 66B, B119C, B119D).

Losses or reversals of losses on a group of underlying contracts at subsequent measurement: The approach applied for losses or reversals of losses at subsequent measurement is different from the approach applied for losses at initial recognition. At subsequent measurement, where changes in the fulfilment cash flows do not adjust the CSM on underlying contracts because the group of underlying contracts is onerous, then the entity similarly does not adjust the CSM on the reinsurance held for changes in fulfilment cash flows associated with these same underlying insurance contracts (paragraph 66 (c) (i) and 66B). For cases where an entity groups together onerous underlying contracts covered by reinsurance contracts held and other insurance contracts not covered by the reinsurance contracts held then the entity is to use a systematic and rational method to determine the portion of the losses arising on the group of underlying insurance contracts which are covered by the reinsurance contracts held (paragraph B119E).

The CSM adjustment determined above is called a loss recovery component in the IFRS 17 standard (paragraph 66B). After a loss recovery component has been established, the loss recovery component is adjusted in subsequent periods to reflect changes in the onerous group of underlying insurance contracts. No specific method is prescribed for this adjustment, however the carrying amount of the loss recovery component cannot exceed the portion of the carrying amount of the onerous group of underlying insurance contracts that the entity expects to recover from the related group of reinsurance contracts held (paragraph B119F).

The reversals of a loss recovery component in a period determined above are reflected in the measurement of the CSM of the group of reinsurance contracts held in the period, unless those reversals reflect changes in the fulfillment cash flows of the group of reinsurance contracts held (paragraph 66 (bb)).

If a reinsurance contract held is accounted for under the PAA, the same general approach is applied, however, the adjustments are made to the asset for remaining coverage rather than the CSM as the PAA does not have a CSM component (paragraphs 70A and 66c(ii)).

Specific guidance is also given in the standard to handle the special situations of business acquired through business combinations or portfolio transfer. Which follow the general approach above (paragraphs B95B, B95C, B95D)

Another purpose of the loss recovery component is to determine the amounts that are presented in profit or loss as reversals of recoveries of losses from reinsurance contracts held and are consequently excluded from the allocation of premiums paid to the reinsurance and instead treated as amounts recovered from the reinsurer (paragraphs 66B, 86(ba)).

**9.9. Would the future cash flow assumptions for business covered by reinsurance held be the same as the future cash flow assumptions used for the same business in the underlying insurance contract valuation?**

Paragraph 63 states that "*the entity shall use consistent assumptions to measure the estimates of the present value of the future cash flows for the group of reinsurancecontracts held and the estimates of the present value of the future cash flows for the group(s) of underlying insurance contracts.*" This requirement for consistency applies to all assumptions, insurance and financial. Consistent does not mean all assumptions have to be identical, as there may be assumptions where the assumptions used for measuring the underlying insurance contract are not valid for reinsurance contracts held.

For example, assumptions related to policyholder behaviour or insured decrements (, mortality rates, morbidity rates, policyholder claims assumptions) would be consistent between the underlying insurance contract valuation and where these assumptions are used to measure the value of the reinsurance held. Other assumptions, such as expenses may be different. Discount rates will reflect differences between the liquidity characteristics of the reinsurance contracts held versus the underlying insurance contracts.

In addition, other variables and determinants of the cash flows, including the contract boundary, may be different depending on the terms of the reinsurance. See also question 9.13.

**9.10. How is the reinsurance held risk adjustment for non-financial risk determined?**

A specific definition for the determination of the risk adjustment for reinsurance contracts held is provided that replaces the general definition in paragraph 37 used for insurance and reinsurance contracts issued in the standard. Under the definition for reinsurance held, the risk adjustment for non-financial risk represents the amount of non-financial risk being transferred by the holder of a group of reinsurance contracts to the issuer(s) of those contracts (paragraph 64).

The risk adjustment for the reinsurance held can therefore conceptually be thought of as the difference in the risk position of the entity with (i.e., net position) and without (i.e., gross position) the reinsurance held. As a result, the risk adjustment for the reinsurance held could be determined based on the difference between these amounts.

Another possibility to determine the risk adjustment for reinsurance held is to consider the cost of reinsurance as an indicator of the entity's view of the compensation that would be required to keep (i.e., not reinsure) the risk. Under this view, the cost of reinsurance would be an estimate of the risk adjustment for the reinsurance held.

For reinsurance held, because the risk adjustment for reinsurance held is defined based on the amount of risk transferred to the reinsurer, the risk adjustment for reinsurance held will either increase the reinsurance contract asset or reduce the reinsurance contract liability. This has the opposite effect from the risk adjustment on insurance contracts

issued. For example, the release of the risk adjustment on reinsurance contracts held in a reporting period will reduce reported profit rather than increase it.

**9.11. How is counter party risk of non-performance by the issuer of reinsurance contracts reflected in reinsurance contracts held?**

In determining the fulfillment cash flows, the present value estimates of future cash flows to be received for the reinsurance contracts held are reduced by an allowance for reinsurance counter party failure to fulfill the contractual obligations (paragraph 63 and further clarified in BC308). There are two possible approaches, the first to adjust the cash flows directly and the second to adjust the discount rates to reflect this risk.

The allowance would reflect not only potential reinsurance counter party failure due to defaults (i.e., credit events), but would include allowances for disputes resulting in reduced payments as well as reflecting the effects of collateral. Default allowances requires an estimate of expected credit losses, which would normally reflect the current financial condition and credit standing of the reinsurance counter party. If the allowance for non-performance in the fulfillment cash flows is changed, then the change does not adjust the contractual service margin (paragraph 67).

With respect to the risk adjustment, the requirement in paragraph 64 that the risk adjustment for non-financial risk represents the amount of risk being transferred by the entity to the reinsurer has been interpreted two ways with respect to non-performance risk. An interpretation which follows directly from the definition of the risk adjustment for reinsurance contracts held in paragraph 64 is that counter party risk is not considered in the risk adjustment as this is not a risk formally transferred by the contract. An alternative interpretation is that counter party risk is appropriate to consider in the risk adjustment since this is a risk that, at an entity level, exists for the party with the reinsurance held as a result of entering the contract to transfer risk. Under this alternative interpretation it would be important to ensure there is no double counting for credit risk between the risk adjustment and the estimate of future cash flows.

**9.12. Would grouping of contracts for reinsurance held be the same as contract grouping used for the same business in the gross insurance liabilities?**

The grouping of reinsurance held contracts may be different than the contract grouping for the corresponding underlying contracts.

A reinsurance contract is a single contract, even though it may consist of cessions of many underlying insurance contracts.

Under IFRS 17, contracts are normally grouped, although it is permissible to have one contract in a group. Because certain reinsurance contracts already aggregate risk and consolidate underlying contract exposures, it may in some circumstances make sense to make use of the permission to have one (reinsurance) contract in a group.

The presumption in IFRS 17 is that the legal form of a contract would generally represent a single contract. Unless a contract contains components that would be within the scope

of another standard if they were separate contracts, the contract is contemplated as the most basic unit of account (i.e., lowest level of aggregation).

There may be circumstances where the legal form of a reinsurance contract is not sufficiently granular to reflect the substance of its contractual rights and obligations. In this circumstance, a contract might be disaggregated into components. Disaggregating a contract is not an accounting policy choice and would need to be based on relevant facts and circumstances necessary to override the presumption of the contract of as the most basic unit of account. Relevant considerations in the assessment of disaggregating a contract would include (i) whether the risks covered by the contract are independent, (ii) whether components of the contract can lapse separately (iii) whether components of the contract can be priced separately. None of these factors individually can be considered determinative and need to be assessed together with all the relevant facts and circumstances.

For the issuer of underlying contracts, the fact that a reinsurance contract held covers underlying contracts that the issuer has included in different groups of contracts and / or portfolios is not, by itself, sufficient to conclude that the reinsurance contract held does not reflect the substance of its contractual rights and contractual obligations and that unbundling is warranted.

The grouping requirements for insurance contracts outlined in paragraphs 14 – 24 also apply for reinsurance, with the exception that for reinsurance contract held there is an additional paragraph, 61, to account for the fact that reinsurance contracts cannot be onerous. Paragraph 61 states that "*An entity shall divide portfolios of reinsurance contracts held applying paragraphs 14 – 24, except that the reference to onerous contracts in those paragraphs shall be replaced with a reference to contracts on which there is a net gain on initial recognition. For some reinsurance contracts held, applying paragraphs 14 – 24 will result in a group that comprises a single contract*".

**9.13. What are the considerations when a reinsurance held contract may cover multiple years of underlying insurance contracts or risk attachments?**

For reinsurance held, a single reinsurance held contract may cover multiple years of underlying contract cessions or risk attachments. Some reinsurance held contracts, in addition to covering existing risks / cessions, are open to accepting future cessions / risk attachments. This leads to the question, when measuring the value of an existing group of reinsurance held contracts at a point of time T, what future cessions / risk attachments after time T are reflected in the future cash flows.

There are several relevant paragraphs in the standard.

Paragraph 33 states that

> *"An entity shall include in the measurement of a group of insurance contracts all the future cash flows within the boundary of each contract in the group"*

Paragraph 34 states that "*Cash Flows are within the boundary of an insurance contract if they arise from substantive rights and obligations that exist during the reporting period in*

*which the entity can compel the policyholder to pay the premiums or in which the entity has a substantive obligation to provide the policyholder with services (see paragraphs B61-B71). A substantive obligation to provide services ends when*:

*a) the entity has the practical ability to reassess the risks of the particular policyholder and, as a result, can set a price or level of benefits that fully reflects those risks; or*

*b) both of the following criteria are satisfied: (i) The entity has the practical ability to reassess the risks of the portfolio of insurance contracts that contains the contract and, as a result, can set a price or level of benefits that fully reflects the risk of that portfolio; and (ii) the pricing of the premiums for coverage up to the date when the risks are assessed does not take into account the risks that relate to periods after the reassessment date"*

The above wording in paragraph 34 is written from the perspective of a directly written insurance contract and needs to be interpreted for reinsurance held contracts. AP03 February 2018 IASB TRG provided the view that, for reinsurance contracts held, cash flows are considered within the contract boundary for a reinsurance held contract if they arise from substantive rights and obligations that exist during the reporting period in which the ceding entity is compelled to pay amounts to the reinsurer or in which the entity has a substantive right to receive services from the reinsurer.

Essentially this means that the contract boundary for a reinsurance held contract under this interpretation would be the maximum of the point to which the ceding entity can be compelled to keep the coverage on substantively unchanged terms, and the point at which the ceding entity can compel the reinsurer to provide services on substantively unchanged terms. This duality of conditions that need to be met to reach a contract boundary is an important consideration in establishing the contract boundary.

The implications of the above paragraphs might best be illustrated by examples.

Consider two possible non-proportionate reinsurance held contracts initially recognized in period T, each, for the sake of simplicity, considered a separate "group" of 1 contract.

Contract A is a reinsurance contract held where existing risks are covered until they expire at fixed rates guaranteed by the reinsurance contract. The contract is open to new risk attachments but the reinsurer and ceding insurer can terminate the addition of new risks at any time.

This contract would be treated as a contract with a contract boundary at the reporting date since the ceding entity cannot be compelled to continue the contract beyond the reporting date, nor does the entity have the right to compel the reinsurer to continue the coverage beyond the reporting date.

The implication is that at the valuation date at the end of period T, the entity would project future cash flows related to the risk attachments during period T, and would not project future risk attachments since there is no contractual obligation from either party

to continue to accept new risks into the contract. At time T+1, the cash flows of the risks that attach between T and T+1 would be treated as a separate and new contract for IFRS 17 purposes. (i.e., there are two contracts for IFRS 17 purposes: one for risks that attached during period T, and one for risks that attach during period T+1). See question 9.20 for further discussion of the contract boundaries.

Contract B is a reinsurance contract held where existing risks are covered until they expire at guaranteed rates. The contract is open to new risks at fixed rates guaranteed by the reinsurance contract for at least the next 3 years, after which the reinsurer and ceding entity can terminate the addition of new risks.

The contract would be treated as a contract with a 3-year contract boundary since that is the date at which the ceding entity can no longer be compelled to continue the contract or have the right to compel the reinsurer to provide services.

The implication is that at the valuation date at the end of period T, the entity would project future cash flows related to the existing risk attachments at time T, and would also project future risk attachments for risks to the end of the 3 year guarantee period because the reinsurer has contractually agreed to accept those risks by locking in guaranteed rates. At time T+1, the cash flows of the reinsurance contract held would include the projections of cash flows for all risk attachments up to time T+1, including true up of cash flows for actual versus expected for risk attachments between T and T + 1, plus updated projected cash flows for future risk attachments to the end of the remaining time in the 3-year guarantee period.

There are other implications that might be considered.

- The future cash flows included may impact the ability to use the PAA for the reinsurance contract held. Where a reinsurance contract is intended to cover multiple years of cessions / risk attachments, it may prove more difficult to prove
- eligibility to apply the PAA for contracts where the coverage period for the underlying contract is only 1 year, but new risks attach after the inception date.
- The IFRS 17 application guidance states that, when determining the discount rates for initial recognition, "*an entity may use weighted-average discount rates over the period that contracts in the group are issued, which applying paragraph 22 cannot exceed one year*" [paragraph B73]. When a reinsurance contract covers multiple cession years and all cession years are considered as part of the same contract for IFRS 17 purposes, the locked-in discount rates for the reinsurance contracts held could be different than the locked-in discount rates for the underlying contracts.

**9.14. Are there special considerations for the initial recognition of proportionate reinsurance held?**

According to paragraph 62A, the recognition of a group of reinsurance contracts held that provide proportionate coverage is delayed until the date that any underling insurance contract is initially recognised, if that date is later than the beginning of the coverage period of the group of reinsurance contracts held.

**9.15. What is a proportionate reinsurance coverage?**

Proportionate reinsurance coverage is not defined in the IASB 17 standard. One interpretation is that proportionate coverage is where the amount of reinsurance coverage for each underlying insurance contract under related reinsurance contract held is a fixed percentage of each claim incurred on underlying insurance contracts, but where the fixed percentage can vary by underlying insurance contract.

**9.16. Can the PAA be used for reinsurance contracts held?**

Yes, reinsurance contracts held are eligible for the PAA provided they meet the criteria to use the approach (paragraph 69). The criteria to use the PAA, such as coverage period of the contracts in the group, need to reflect the contractual terms of the reinsurance contracts held in the group, and not the underlying insurance contracts.

**9.17. Are there potential economic mismatches between the measurement of a reinsurance contract held and the measurement of associated underlying insurance?**

Yes, there are several areas of possible economic mismatch. Significant areas of mismatch include the following:

For reinsurance contracts held, the contract boundary definition means that the measurement of reinsurance contracts held may need to extend to include cash flows associated with future projected cessions up to the point at which the reinsurance contract can be exited for new business. The measurement of underlying insurance contracts will not include any cash flows related to these future projected cessions, since the underlying insurance contracts are only recognized as written. This creates a mismatch in terms of timing of recognition of cessions versus underlying contracts.

Underlying contracts may use the Variable Fee approach, while associated reinsurance held contracts are not eligible to use the Variable Fee approach. This can create measurement mismatches, however, for financial risks this can be mitigated as the entity can apply the risk mitigation option for insurance contracts with direct participation features when the entity uses reinsurance contracts held to mitigate financial risks.

Underlying contracts may have different liquidity characteristics than reinsurance contracts held, leading to different discount rates.

Other mismatches may also be present, based on the specific circumstances.

**9.18. If a reinsurance contract held is used to mitigate financial risk from insurance contracts, can this risk mitigation impact be reflected in the accounting?**

Yes, under paragraph B116, when an entity can demonstrate that it uses reinsurance contracts held to mitigate financial risk arising from underlying insurance contracts with direct participation features it can elect to apply the accounting outlined in paragraph B115 in order to reflect the risk mitigation. This allows some or all of the effects of financial risks that would otherwise be reflected in CSM of the underlying insurance contracts to not be reflected in CSM and instead be recognized in a way that is consistent

with how the entity recognizes such effects for the reinsurance contracts held (Paragraph B117A).

### Reinsurance Held and Reinsurance Issued (Questions 9.19 – 9.24)

**9.19. Would the contract boundary used for reinsurance issued and reinsurance held for the same contract necessarily be the same?**

The contract boundary would normally be the same for both parties. This follows from an IASB staff interpretation that the criteria for establishing the contract boundary for both reinsurance issued and reinsurance held is determined by considering the substantive rights and obligations of both parties to the contract.

**9.20. How are contractual options such as recapture, cancellation, or commutation treated in estimating reinsurance cash flows?**

As a first step, any elements that are embedded derivatives are separated and subject to IFRS 9 (paragraph 11).

The cash flows would then reflect the characteristics of the reinsurance contract (excluding the embedded derivatives). The contracts may contain options that may be exercised at the discretion of the party holding or issuing the contract. The cash flows would take into account the expected behaviour of the parties to the contract in exercising these options on a basis consistent with the assumptions used in the measurement.

The rights of the parties holding or issuing the contract also would be taken into account in determining the contract boundary.

**9.21. Can reinsurance contracts qualify as insurance contracts with direct participation features?**

Reinsurance contracts, including both reinsurance held and reinsurance issued, cannot qualify as insurance contracts with direct participation features (paragraph B109).

**9.22. How is continuation of a reinsurance contract past a contract boundary be treated?**

Under termination provisions common in many reinsurance structures, it will not be uncommon under IFRS 17 to have situations where a reinsurance contract is extended beyond the original IFRS 17 contract boundary through the exercise of contractual terms – for example, continuation of a fully cancellable reinsurance contract with guaranteed premiums past the cancellation exercise date which created the boundary.

Relevant paragraphs in the standard to address this circumstance include the following:

- Paragraph 35 which states that "*an entity shall not recognise as a liability or as an asset any amounts relating to expected premiums or expected claims outside the boundary of the insurance contract. Such amounts relate to future insurance contracts*",
- Paragraph B64 which states that "*in determining the estimates of future cash flows at the end of a reporting period, an entity shall reassess the boundary of an*

*insurance contract to include the effect of changes in circumstances on the entity's substantive rights and obligations*".

- Paragraphs 72 and 73 for treatment of various forms of contract modifications, including that statement in paragraph 72 that "*the exercise of a right included in the terms of a contract is not a modification*.

This topic was addressed in detail at the September 2018 IASB TRG meeting (AP05), The predominant interpretation was that, pursuant to Paragraph 35, with the exception noted in the next paragraph, the continuation of a contract past its original contract boundary would be treated as a new contract with a new contract boundary for any risks that attach after that point.

Paragraph B64 would apply and the original contract boundary would be extended (as opposed to a new IFRS 17 contract being recognized) only when restrictions on an entity's practical ability to assess risk and reprice have changed.

**9.23. How are profit participation features (experience refund provisions) in reinsurance contracts treated?**

Profit participation features (also known as experience refund provisions) in reinsurance contracts are designed to return a portion of the premium paid to an entity ceding insurance contract risk based on the performance of the underlying insurance contracts.

Profit participation features are modelled in the fulfilment cash flows, and reflect the amounts that would be expected to be paid based on the expected cash flow assumptions. In some reinsurance arrangements profit participation features are based on the combined profitability of multiple reinsurance contracts between issuers and holders of reinsurance contracts rather than on the performance of reinsurance contracts individually. In these situations, the interactions across contracts would normally be appropriately captured in the fulfilment cash flows and CSM. Of relevance, IFRS 17 states that *a set of insurance contracts with the same or a related counterparty may achieve, or be designed to achieve, an overall commercial effect. In order to report the substance of such contracts, it may be necessary to treat the set or series of contracts as a whole* (paragraph 9). Therefore, combining risks that would otherwise be included in different IFRS 17 contracts could be appropriate.

Profit participation features can have varied contractual structures. In some instances, the profit participation feature may include elements that meet the attributes of an investment component (i.e., an amount that is repaid to the policyholder in all circumstances) in which case the amounts that have the attributes of an investment component should be shown as an investment component and excluded form both reinsurance premiums paid and reinsurance recoveries

An example of a profit participation feature that may meet the definition of an investment component is a structure where an initial profit commission of x% of reinsurance premium is paid by the issuer of a reinsurer contract to the holder of a reinsurance contract, and the reimbursement of claims under the reinsurance contract is

(100-x)% of claims up to the reinsurance premium, and 100% of the excess. In this example, the x% of reinsurance premium may meet the definition of an investment component.

Profit participation features in reinsurance contracts are normally highly integrated with the performance of the underlying insurance contracts, and could not be sold as stand-alone products. In these circumstances, even though the profit participation features may be investment components, they would not be treated as distinct investment component as they do not fulfil the requirements of IFRS 17 B31. It. They would therefore be treated as a non-distinct investment component.

**9.24. How are funds withheld features in reinsurance contracts treated?**

IFRS 17 prohibits separating non-insurance components when not required (Paragraph 13 and BC 114). As a result, cash flows for funds withheld components would be included in the cash flows of the reinsurance contracts for measurement. As a consequence, the measurement values of the reinsurance contracts would be net of funds withheld.

For many preparers, this will be a change in treatment from IFRS 4, which did permit voluntary separation of such features, which led to reporting of separate funds withheld balances and measurement values for reinsurance contracts gross of funds withheld balances.

## Reinsurance Issued (Questions 9.25 – 9.27)

**9.25. How is reinsurance issued presented on the IFRS balance sheet?**

Where an entity has entered into reinsurance contracts to assume risk and obligations, the value of these contracts is shown on the balance sheet as part of the insurance contract liabilities or assets rather than with reinsurance contract held assets or liabilities. Contracts are aggregated at the portfolio level for presentation as assets or liabilities.

**9.26. Are there special considerations for reinsurance issued liabilities?**

In general, reinsurance issued business, once classified as insurance risk, is treated consistently in approach with all other gross insurance liabilities issued.

Data issues are frequently more prevalent for reinsurance issued business than for underlying insurance business, as the reinsuring entity is further removed from the underlying risks than the ceding entity, and is usually reliant on the ceding entity for underlying data on insured risks. This means that there is frequently more use of approximations both in terms of data and modeling approach.

**9.27. What are the considerations when a reinsurance issued contract may cover multiple years of underlying insurance contracts or risk attachments?**

For reinsurance issued, a single reinsurance contract might cover multiple years of underlying contract cessions or risk attachments. In addition to covering existing risks / cessions, contracts might be open to accepting future cessions / risk attachments.

The considerations and relevant paragraphs in the standard are similar to reinsurance held as covered in question 9.13.

## Section C – Uses of fair value

This section considers the use of the fair value measurement of insurance contracts for IFRS 17 including for business combinations or portfolio transfers and on transition if the fair value approach is chosen. This section comprises three chapters:

- Fair Value – Chapter 10
- Business Combinations and Portfolio Transfers – Chapter 11
- Transition – Chapter 12

Chapter 10 discusses the principles of how to determine the fair value of insurance contracts in the context of the more general guidance on fair value measurement found in IFRS 13 Fair Value Measurement and of common insurance industry practices.

Chapter 11 discusses the requirements under IFRS 17 when accounting for insurance contracts or liabilities for incurred claims acquired in a business combination or a portfolio transfer, and in particular the need to use the fair value of the contracts as the initial consideration.

Chapter 12 discusses the one-time event of presenting statements applying IFRS 17 for the first time with a section for each of the three transition approaches described in IFRS 17 -- the retrospective approach of IAS 8 and the alternative approaches introduced by IFRS 17, modified retrospective and fair value.

## Chapter 10 – Fair Value

Before consulting this chapter, be sure to read the introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

**10.A. What does this chapter address?**

This chapter considers the fair value measurement of contracts in IFRS 17 in the context of the more general guidance on fair value measurement found in IFRS 13 *Fair Value Measurement* ("IFRS 13") and of common insurance industry practices.

**10.B. Which sections of IFRS 17 address this topic?**

Paragraphs 39 and B94 specify the use of fair value when contracts are acquired in a business combination. Paragraphs C5 and C20-C24 discuss the use of fair value on transition to IFRS 17.

**10.C. What other IAA documents are relevant to this topic?**

Chapter 11 – *Business Combinations and Portfolio Transfers*, Chapter 12 – *Transition*, and Chapter 13 – *Embedded Derivatives*.

**10.1. When is fair value measurement applied to insurance contracts[25]?**

In IFRS 17, fair value measurement is used:

a. at initial recognition of contracts acquired in a business combination. The fair value is determined as of the date of the acquisition (see Chapter 11 – Business Combinations and Portfolio Transfers); and

b. on transition to IFRS 17 when the fair value approach (paragraph C5(b)) is selected. The fair value is determined as at the transition date, which is usually the beginning of the annual period immediately preceding the date of initial application of IFRS 17 (see Chapter 12 – Transition).

For insurance contracts acquired in a business combination, IFRS 17 states that the fair value of the contracts is the consideration received for those contracts (paragraph B94). Business combinations may include other assets and liabilities, in which case the consideration received for the insurance contracts may need to be estimated, as the business combination or purchase agreement may not list separate prices for separate components of the transaction (see question 10.4).

This chapter addresses fair value measurement in the context of business combinations where the consideration received for the insurance contracts is estimated and in the context of transition to IFRS 17. This chapter may also be useful in the context of contracts acquired in a transaction that does not form a business combination where

[25] The term "insurance contracts" as used in this chapter includes all contracts in the scope of IFRS 17.

the fair value of groups of contracts is used to allocate the total consideration for the entire block of contracts to the groups.

Fair value measurement is also used to measure embedded derivatives that are separated from insurance contracts and for financial instruments issued by insurers which are not in the scope of IFRS 17. These applications of fair value measurement are not addressed in this chapter.

### 10.2. What is the fair value of insurance contracts?

IFRS 17 does not provide guidance on determining the fair value of insurance contracts except as noted below in relation to a demand feature. With certain exceptions, IFRS 13 provides guidance when other IFRSs require fair value measurement. Insurance contracts are not specifically excluded from the scope of IFRS 13, and, consequently, IFRS 13 is relevant to insurance contracts. IFRS 13 does not provide specific guidance on insurance contracts; hence the entity is left to consider how to apply the guidance in IFRS 13 to insurance contracts.

Paragraph 9 of IFRS 13 defines fair value as:

> *"…the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date."*

A comprehensive discussion of IFRS 13 is beyond the scope of this chapter. This chapter does include a discussion of the relevant considerations of IFRS 13 as they apply to insurance contracts.

| IFRS 13 Fair Value Measurement | |
|---|---|
| IFRS 13 requirement | Application to insurance contracts |
| The price may be observable, but if it is not, it must be estimated (paragraph 2 of IFRS 13). | Prices for insurance contracts are rarely observable. In most cases, the fair value of insurance contracts needs to be estimated. See question 10.3. |
| Fair value is a market-based measurement, not an entity-specific measurement (paragraph 2 of IFRS 13). Fair value should be measured using the assumptions that market participants would use (paragraph 22 of IFRS 13). | Measurement from the perspective of a market participant may be different from the measurement of fulfilment cash flows (paragraph 57 of IFRS 13). See questions 10.4 and 10.5. |

| IFRS 13 Fair Value Measurement | |
|---|---|
| IFRS 13 requirement | Application to insurance contracts |
| The objective is to estimate the price under current market conditions (paragraph 2 of IFRS 13). | Current market conditions refer not only to general economic conditions (e.g., interest rates) but also to the state of the market for transfers of insurance contracts, which may be difficult to determine. See question 10.4. |
| The price is based on a hypothetical transaction in the principal market or, if there is no principal market, in the most advantageous market (paragraph 16 of IFRS 13). | The distinction between the principal market and the most advantageous market for insurance contracts may not make a difference. In some jurisdictions, market participants might be limited to other insurers or reinsurers that would be able to complete a transaction. |
| The unit of account is determined in accordance with IFRS 17 (paragraph 14 of IFRS 13) and is the level at which an asset or a liability is aggregated or disaggregated for recognition purposes (Appendix A of IFRS 13). | In IFRS 17, the unit of account for recognition and measurement of the liability is groups of insurance contracts ("groups"), as that is described in IFRS 17 (see Chapter 5 – Level of Aggregation). The fair value would similarly be determined by groups. |
| When a price for a liability is not available and the identical item is held by another party as an asset, fair value is measured from the perspective of market participant that holds the asset (paragraph 37 of IFRS 13). | For this purpose, policyholders are not considered to be market participants. Furthermore, the price associated with a viatical settlement would not be relevant to the measurement of fair value of a group. |
| Non-performance risk, (which includes consideration of credit standing) is reflected in the fair value measurement of a liability (paragraph 42 of IFRS 13). | Fair value measurement reflects non-performance risk of the entity, however, the measurement of fulfilment cash flows under IFRS 17 does not. For reinsurance contracts held, IFRS 17 requires the credit standing of the reinsurer be reflected (see question 10.5). |

| IFRS 13 Fair Value Measurement | |
|---|---|
| IFRS 13 requirement | Application to insurance contracts |
| There is a demand feature on the fair value of financial liabilities (paragraph 47 of IFRS 13). | IFRS 17 states that a demand feature does not apply when the fair value of insurance contracts is determined (paragraph B94, business combinations, and C20, transition). See question 10.5. |
| When price is not observable, the entity measures fair value using another valuation technique that maximizes the use of relevant observable inputs and minimizes the use of unobservable inputs (paragraph 3 of IFRS 13).<br>An entity shall use valuation techniques consistent with one or more of the market approaches, the cost approach, and the income approach to measure fair value (paragraph 62 of IFRS 13). | Actuarial valuation techniques (such as embedded values), actuarial appraisals, and other present values techniques appear to be consistent with the income approach to measure fair value (paragraph B19 of IFRS 13) but may need to be adapted for the purpose of IFRS 17 (see questions 10.5 and 10.6). |
| IFRS 13 has a hierarchy of inputs to valuation techniques used to measure fair value (paragraphs 72–90 of IFRS 13):<br>• Level 1: Observable quoted prices, in active markets;<br>• Level 2: Quoted prices are not available, but the input is based on observable market data; and<br>• Level 3: Unobservable inputs.<br>The asset or liability being measured is characterized by the highest input level. | Fair value measurement of insurance contracts would usually require Level 3 inputs, especially with respect to non-market variables, and hence are likely to be characterized as Level 3. |
| IFRS 13 has a number of disclosure requirements related to fair value measurement after initial recognition (paragraphs 91–99 of IFRS 13). | Fair value measurement of insurance contracts only takes place at an initial date (i.e., acquisition date or date of first reporting on transition), and, therefore, the disclosure requirements of paragraphs 91–99 of IFRS 13 do not apply. |

**10.3. How is the fair value of insurance contracts calculated?**

IFRS 13 does not prescribe a valuation technique. In the context of a business combination, the entity may have an analysis of value that can form the basis of the fair value measurement, perhaps requiring adjustment to be consistent with the objective of an exit price.

The application guidance in Appendix B of IFRS 13 provides information about other possible valuation techniques. Among them are present value techniques (paragraphs B12-B30 of IFRS 13) for the fair value measurement of a stream of cash flows. These techniques share many characteristics with the IFRS 17 guidance on measuring fulfilment cash flows (e.g., paragraph B23 of IFRS 13) and therefore are candidates for the estimation of fair value of insurance contracts under IFRS 17.

An approach to estimating fair value of a group using a present value technique is to adjust the fulfilment cash flows of the group in order to fulfil the objectives of IFRS 13. Adjustments to reflect the perspective of market participants (i.e., to move to an exit price) are discussed in question 10.5.

IFRS 13 does not specify that a fair value estimate be before-tax or after-tax. However, there is a general admonition that valuations should be internally consistent, with specific mention that this general principle means that after-tax cash flows are discounted with an after-tax rate, and pre-tax cash flows are discounted with a pre-tax rate.

**10.4. How would IFRS 13 Level 1 and 2 inputs (observable market information) be applied?**

Market transactions involving insurance contracts may provide information about fair value, and, if so, the estimated fair value is likely to be consistent with observable market information where available. It is unlikely, however, that a direct relevant market price would be found. Furthermore, the transaction price at which a group is exchanged may include factors (such as those in paragraph B4 of IFRS 13) that would be ignored for the purpose of estimating the fair value of a group. Examples of factors specific to insurance contracts that would be ignored include:

- Expected profits or losses associated with cash flows beyond the boundaries of the insurance contracts in the group;
- Expected profits or losses associated with investment/service components that will be recognized and measured separately from the group; and
- Expense, tax, or other synergies that a particular market participant might expect to realize but that would not be generally available in the principal market.

Information that would be relevant, if reasonably available, might include:

- Market view of expected expenses associated with fulfilling the obligations of the insurance contracts in the group;
- Market view of the cost of risk associated with taking on the obligations of the insurance contracts in the group, and

- Market view of the cost of reinsurance that would be required to take on the obligations of the insurance contracts in the group.

IFRS 13 requires the entity to maximise the use of relevant observable inputs (paragraphs 3, 36, 61 and 67 of IFRS 13). However, an entity need not undertake exhaustive efforts to obtain information about market participant assumptions and may use information that is reasonably available (paragraph 89 of IFRS 13).

**10.5. When using a present value approach, what adjustments would be made to fulfilment cash flows to satisfy the objectives of fair value measurement?**

When using a present value approach, the fair value of a group of insurance contracts can be seen as the fulfilment cash flows adjusted to take into account the perspective of market participants (i.e., move to an exit price).

Possible adjustments that could be made include the following:

- The discount rates applied to the estimates of future cash flows (paragraph B14(c) of IFRS13) are adjusted to reflect the entity's own credit risk (paragraph B13(f) of IFRS13) and may require adjustment for reinsurer own credit in the case of reinsurance contracts held.
- Where consistent with market practice, the discount rates applied to the estimates of future cash flows are adjusted to reflect the perspective of market participants on the liquidity characteristics of the group of insurance contracts.
- Where different from the entity's view, projected expense cash flows reflect the market view of the expenses associated with fulfilling the obligations of the group of insurance contracts. For example, where consistent with market practice, expense cash flows are increased to cover a reasonable level of general expenses (i.e., expenses not directly attributed to the portfolio to which the group belongs).
- Where different from the entity's view, other assumptions used in cash flow projections are adjusted to reflect the market view. For most assumptions, the market view is likely to be the same as the entity's view because the entity has the best information available and the fulfilment cash flows take into account all relevant available information. However, for assumptions that are not specific to the entity or its contracts (e.g., future population mortality improvement or entity specific synergies), the market view might differ from the entity's view.
- Where different from the entity's view, the risk adjustment for non-financial risk is adjusted to reflect a degree of risk aversion (paragraph B88(b)) consistent with the market view.
- Where different from the entity's view, the degree of diversification benefit (paragraph B88(a)) included in the risk adjustment for non-financial risk is adjusted to be consistent with the market view. As noted in question 10.2, the unit of account for fair value measurement under IFRS 17 is the group.

- Where consistent with market practice and where not otherwise reflected in the estimate of fair value, the risk adjustment for non-financial risk is increased to include the cost of capital on risks not covered in the fulfilment cash flows, including non-observable financial risks.
- Where consistent with market practice and where not otherwise reflected in the estimate of fair value, the fair value is adjusted to reflect expense, tax, or other synergies that would be available in the principal market.
- Where not included in the other points above, the fair value is adjusted to reflect the return that a market participant would require for undertaking the activity (see paragraphs 41 and B31 of IFRS 13), which may be interpreted to include profit margins that a market participant would require for providing insurance coverage and other investment related services attached to the group.

**10.6. How do embedded values or appraisal values compare to fair values?**

Embedded values or appraisal values are typically determined in the context of a transfer of liabilities together with supporting assets and consider the present value of future expected profits less the cost of capital.

The fair value of insurance contracts under IFRS 17 is the fair value of the liabilities only (i.e., the supporting assets are ignored). Therefore, embedded and appraisal values cannot be used directly as the fair value of a group under IFRS 17, because they measure the profit expected from liabilities together with assets rather than the amount of assets that would be required to take over the obligations (i.e., liabilities) of the contracts.

However, embedded and appraisal value techniques could be adapted to estimate the fair value of the liabilities, for example, by solving for the amount of cash that (with a market view) would be required to provide an embedded value of nil after satisfying the entity's cost of capital and other return requirements. Also, embedded and appraisal value observations can provide some context to help assess the market view of the degree of risk aversion, cost of capital, or other factors affecting fair value measurement (see question 10.5).

**10.7. Can a group be onerous on acquisition or transition?**

A group would be onerous if the fair value is less than the fulfilment cash flows. This may be unusual under the present value approach described in this chapter, as most of the adjustments noted in question 10.5 contribute to the fair value being higher than fulfilment cash flows. However, there may be circumstances in which market conditions conspire to make the fair value less than the fulfilment cash flows, so this possibility would not be disregarded.

**10.8. Are there any special considerations for estimating the fair value of insurance contracts with direct or indirect participation features?**

The starting point is typically the same as for contracts without participation features. Adjustments made to fulfilment cash flows (question 10.5) would reflect the participation features of the insurance contracts. In particular, if discount rates applied to cash flows

that vary based on the returns on underlying items have been adjusted to reflect that variability (paragraph B74(b)), the discount rates used for fair value measurement would be similarly adjusted.

Alternatively (equivalently), the fair value of a group could be estimated as the fair value of the groups' share of the underlying items with adjustments as needed to account for the non-participating features of the contracts in the group.

**10.9. Are there any special considerations for estimating the fair value of reinsurance contracts held?**

The approach is the same as for direct written contracts. The market for reinsurance contracts held would be related to the market for the contracts that are reinsured, as transactions involving reinsurance contracts held are usually part of transactions involving the reinsured contracts. With this perspective, the fair value of a group of reinsurance contracts held can be viewed as the amount that brings the fair value of the reinsured (underlying direct) contracts to the net fair value of the direct contracts combined with the reinsurance contracts held. In other words, the fair value of a group of reinsurance contracts is the difference between the fair value of the underlying direct contracts (ignoring reinsurance) and the fair value of the underlying direct contracts combined with the reinsurance contracts held.

**10.10. Should the fair value disclosures of investment contracts with direct participating features be prepared according to IFRS 7?**

No, the scope exclusion to paragraph 3(d) of IFRS 7 Financial Instruments: Disclosures is amended to scope out all the contracts within the scope of IFRS 17 Insurance Contracts. However, the disclosure is required for the investment components that are separated from contracts within the scope of IFRS 17 (see paragraph 3(d)(ii) of IFRS 7).

## Chapter 11 – Business Combinations and Portfolio Transfers

Before consulting this chapter, be sure to read the introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

### 11.A. What does this chapter address?

This chapter considers the requirements under IFRS 17 when accounting for insurance contracts or liabilities for incurred claims acquired in a business combination within the scope of IFRS 3 Business Combinations ("IFRS 3") or a portfolio transfer, and in particular the need to use the fair value of the contracts to determine the initial consideration. This chapter considers the interaction between IFRS 17 and the more general guidance found in IFRS 3 and discusses aspects of business combinations, such as the determination of goodwill and the recognition of intangible assets.

Business combinations under common control are outside of the scope of IFRS 3 and excluded from the scope of the requirements for business combinations in IFRS 17. Business combinations under common control are currently outside the scope of IFRSs and accounted for in different ways. As of October 2020, the IASB has a current project on business combinations under common control.

### 11.B. Which sections of IFRS 17 address this topic?

Paragraphs 39, 108, and B93-B95 provide guidance on this topic. Paragraph B5 may be relevant. Appendix D delineates concomitant amendments to IFRS 3.

### 11.C. What other IAA documents are relevant to this topic?

Chapter 10 – Fair Value is directly relevant. Contracts acquired in a business combination or in a portfolio transfer are measured by approaches consistent with the approaches used by the acquiring entity in valuing the acquisition.

### 11.1. What are the general requirements of IFRS 3 for accounting for a business combination?

Paragraph 4 of IFRS 3 requires the acquisition method of accounting to be applied to business combinations within its scope. The acquisition method views a business combination from the perspective of the acquirer. The acquirer purchases the assets and assumes the obligations of the seller. The measurement of the acquirer's assets and liabilities that existed before the acquisition is not affected by the transaction.

Paragraph 5 of IFRS 3 describes the acquisition method as comprising four steps:

- Identifying the acquirer;
- Determining the acquisition date;
- Recognising and measuring the identifiable assets acquired and the liabilities assumed and
- Recognising and measuring goodwill or a gain from a bargain purchase.

Identifying the acquirer and determining the acquisition date are sometimes complex matters that do not require actuarial expertise. These issues are not in the scope of this chapter. Guidance can be found in paragraph 7 of IFRS 3, which in turn refers to IFRS 10 Consolidated Financial Statements, and in paragraphs B13-B18 of IFRS 3.

This chapter is primarily concerned with step 3 as it relates to insurance contracts and for acquisitions that do not form a business combination. There are some paragraphs and an appendix that provide some information about the other aspects of steps 3 and 4 to help actuaries understand the broader context in which the measurement of insurance contracts assets and liabilities is taking place.

### 11.2. What is a business combination, and how does it differ from a transfer of insurance contracts?

IFRS 17 does not define the term "business combination". There is guidance for determining if a transaction is a business combination in IFRS 3, as discussed further below.

For the purposes of this chapter, a transfer is a transaction involving contracts in the scope of IFRS 17 that may not constitute a business combination. Although not stated as such, the distinction likely makes no difference to the measurement of the assets or liabilities, but it may affect the goodwill and the tax accounting associated with the transaction.

### 11.3. What are the general requirements for determining if a transaction is a business combination?

IFRS 3 in effect defines a process that involves:

a. Determining the nature of the transaction (i.e., determining whether it is a business combination or a different type of transaction);

b. Applying the acquisition method of accounting to transactions that are business combinations;

c. Recognising and measuring the identifiable assets acquired and liabilities assumed; and

d. Recognising and measuring goodwill or a gain from a bargain purchase.

The questions in this chapter expand on these topics and related matters.

IFRS 3 (Appendix A) defines a business combination as "A transaction or other event in which an acquirer obtains control of one or more businesses." IFRS 3 goes on to state that transactions referred to as "true mergers" or "mergers of equals" are also business combinations. IFRS 3 also defines a business as: an integrated set of activities and assets that is capable of being conducted and managed for the purpose of providing a return in the form of dividends, lower costs, or other economic benefits directly to investors or their owners, members or participants. The acquiree is the acquired business and the "acquirer" is the entity that obtains control of the acquiree. Appendix B of IFRS 3

provides further guidance on determining if the transaction constitutes the acquisition of a business and on identifying the acquirer.

For accounting purposes when there is a business combination, the acquirer is not always the entity which legally acquirers the other entity. Under a reverse acquisition, the entity whose stock is being legally acquired is the acquirer for accounting purposes, while the entity which is legally the acquirer becomes the acquired for accounting purposes. For example, a business combination can occur where a larger entity arranges to have itself bought by a smaller entity, perhaps due to a preference to utilise the common stock characteristics of the smaller entity. The actuary may want to consult with the principal's accounting experts to determine who the acquirer and acquired entities are for accounting purposes.

**11.4. What if the transaction is not a business combination?**

IFRS 3 excludes from its scope the acquisition of an asset or a group of assets that does not constitute a business. Paragraph 2(b) of IFRS 3 states:

> *"In such cases the acquirer shall identify and recognise the individual identifiable assets acquired (including those assets that meet the definition of, and recognition criteria for, intangible assets in IAS 38 Intangible Assets) and liabilities assumed. The cost of the group shall be allocated to the individual identifiable assets and liabilities on the basis of their relative fair values at the date of purchase."*

This guidance presents the possibility that the initial value of acquired assets or liabilities is different from its fair value.

**11.5. How can the guidance in IFRS 3 for determining if a transaction is a business combination be applied to a transaction that involves contracts in the scope of IFRS 17?**

One can conclude from IFRS 3 that the necessary conditions for defining a transaction involving insurance contracts as business combinations are:

- The portfolio or group of contracts must constitute a business or be part of a business; and
- Control over the portfolio is obtained as a result of the transaction.

Determination about whether a transaction is deemed to be a business combination is ultimately made by accounting professionals, but some considerations around what may or may not be a business combination are included here for reference:

The addition of individual or multiple contracts to an entity's book of business in a single transaction may not be sufficient to qualify as a business combination. The act of issuing contracts by itself is unlikely to be considered an acquisition or a business combination. For example, the issuance of several individual contracts to a single owner (e.g., as in the case of corporate-owned life insurance) or purchases of individual contracts in a secondary market (e.g., viatical settlements) would probably not be considered a business combination, but might be accounted for under ordinary insurance or reinsurance accounting rules. A business combination may include the right to issue

future contracts using the same distribution system associated with the purchased block. However, any values directly associated with such rights to issue contracts are not reflected in the liabilities or other values of acquired contracts but may be recognised as intangibles associated with the business combination, as discussed further below. Even without the transfer of the right to issue future contracts, the potential of the net cash flows associated with a portfolio of insurance contracts to generate profits may be sufficient for it to be deemed a business.

The transfer of a block of business from one entity to another might be considered a business combination if the acquirer obtains control of the associated contracts. An acquisition is distinct from a reinsurance transaction, other than novation or assumption reinsurance, as an acquisition transfers control over all aspects of contracts, whereas a reinsurer has at most limited control over the contracts reinsured. For example, an insurer might buy an individual line of business of a multi-line entity by buying certain assets, taking on its obligations through assumption reinsurance and taking control of the sellers' distribution system. The insurer in this example does not buy the shares of the seller, but nonetheless might be viewed as having acquired a business, and if so, would account for the transaction as a business combination.

### 11.6. What are the requirements of IFRS 17 for insurance contracts acquired in a business combination or in a transfer of contracts that do not form a business?

IFRS 17 provides guidance on the treatment of contracts acquired in a business combination or in a transfer of contracts that do not form a business combination. The distinction between a business combination and a transfer of contracts that does not constitute a business is discussed below. The application of the broader, non-insurance specific, guidance relating to business combinations and other acquisitions of assets or liabilities is discussed further in later sections of this chapter. The insurance-specific guidance in IFRS 17 relates to determining the initial Contractual Service Margin ("CSM") for acquired groups of contracts ("acquired group"). According to paragraphs B93-B95:

- The date of initial recognition of the acquired group is the date of the business combination or of the transfer, and the entity should treat those contracts as if they had been entered into on the date of the transaction.
- The initial consideration received or paid for the contracts acquired is a proxy for the premiums received or paid. The consideration excludes amounts paid for any other assets or liabilities acquired in the transaction. In most instances, the initial consideration for a business combination is the fair value of the contracts (see Chapter 10 – Fair Value).
- Unless the Premium Allocation Approach ("PAA") applies, the initial CSM for an acquired group is determined using the consideration as a proxy for the premium paid or received on the acquisition date. In a business combination, if the acquired group is onerous, the difference between the consideration for the acquired group and the fulfillment cash flows forms a loss component and is recognised as part of goodwill. If the transfer of contracts does not form a

business combination, the entity records a loss in the current period for the difference and establishes a loss component for the contracts.

The implication of these paragraphs is that the general requirements of IFRS 17 apply to insurance or reinsurance contracts acquired in a business combination or a transfer and that the fair value of the contracts is used in the determination of goodwill in a business combination. The effect of this implication is that the entity examines contracts acquired in a business combination or a transfer to determine which are in the scope of IFRS 17 and then applies the guidance in IFRS 17 on measurement, presentation, and disclosure to those contracts. There is not a presumption that a contract is insurance at the recognition date, even if it had been classified as insurance by the seller. For example, contracts that had been determined to be insurance contracts at the time that they originated, but, at an acquisition date after the initial application of IFRS 17 no longer transfer significant insurance risk would not be in the scope of IFRS 17 for the purposes of the acquirer. See also Chapter 1 – Classification of Contracts.

The presumptive unit of account for the transaction exists at the business combination level or the treaty (legal contract) level for a portfolio transfer. In practice, many actuaries will allocate the purchase price of the acquired contracts to a lower level of granularity for purposes of initial and subsequent measurement. The practice around unit of account will vary based on the facts and circumstances related to the transaction. (See Chapter 5 – Level of Aggregation for further information about unit of account.)

As noted, the consideration is used in determining the CSM for contracts that do not use the PAA. For contacts that use the PAA, the consideration represents the remaining unallocated premium of the relevant contracts as the liability for remaining coverage.

Liabilities for claims incurred on contracts issued by the acquired entity do not have a CSM. However, IFRS 17 is generally construed to mean that the acquisition of claims liabilities constitutes the issuance of a contract that transfers the risk of adverse development to the acquirer (paragraph B5). In some cases, the fair value and the fulfillment cash flows do not differ. In these cases, there is no CSM. In other cases, the fair value exceeds the fulfillment cash flows. This difference can be viewed as the part of the consideration that compensates the acquirer for the service provided. Hence, any positive difference between the fair value and the fulfillment cash flows of claims liabilities acquired in a business combination or in another transfer is deferred and released into income over the coverage period (i.e., the period over which the acquirer is obligated to settle the claims).

It is also possible that the fair value of acquired insurance contracts is less than the fulfillment value. This situation might occur, for example, if the market conditions were such that the market participants required a margin for risk and profit that was less that the entity's adjustment for risk. It might also be caused by the fact that a fair value considers the credit-standing of the entity, whereas the fulfilment value does not. In this situation, the acquired contracts are onerous; and if the contracts are acquired as part of a business combination, there is a loss component, but there is no effect on profit and loss because the amount by which the fulfillment value exceeds the fair value is

considered in goodwill. If the acquisition of the contracts is not part of a business combination, the entity recognizes a loss for the difference and establishes a loss component, as it would for contracts it issues.

The guidance in IFRS 17 for acquired insurance and reinsurance contracts is consistent with the general guidance in IFRSs for business combinations. Most of the relevant guidance for business combinations is found in IFRS 3. Additional relevant guidance is in IFRS 13 *Fair Value Measurement* ("IFRS 13"), in IAS 12 *Income Taxes* ("IAS 12"), and in IAS 38 *Intangible Assets* ("IAS 38"). Some of the guidance in these IFRSs, which may affect accounting for business combination or transfers, is discussed throughout this chapter.

### 11.7. What are the transition rules applying to business combinations or portfolio transfers that occur(ed) before the effective date of IFRS 17

The general guidance in IFRS 17 for transition applies to contracts in the scope of IFRS 17 acquired in a business combination or other transfer. As discussed previously, the recognition date of the acquired contracts is the date of the business combination or of the transfer. Hence, the transition does not require the entity to go back to the origination of the contracts but rather to the date the entity acquired them.

For acquisitions occurring before the initial application date of IFRS 17, the classification of contracts as insurance or otherwise is per the existing provisions of paragraph 17 of IFRS 3. Thus, contracts classified as insurance at origination would remain classified as insurance on acquisition if they were acquired before the application date of IFRS 17. There is no need to restate any existing goodwill balances or reassess whether the contract was in scope of IFRS 17 when it was acquired, even if IFRS 17 is applied retrospectively.

At transition, the date of initial recognition is the date of acquisition and the fair value of the group at that date would be required to apply the full or modified retrospective approach. If the fair value of the group at the date of acquisition is not available without hindsight, the fair value approach to transition would be used. Also, as clarified in IFRS 17 paragraphs C9A and C22A, incurred claims liabilities on groups acquired before the effective date of IFRS 17 can remain incurred claims liabilities. Thus, there is no need to go back to the date of acquisition and consider whether, under IFRS 17, they would have been changed to groups that transfer the risk of adverse development of claims costs.

# Appendix to Chapter 11

This Appendix provides further information about IFRS 3, and is taken from IAN 11 – Business Combinations under International Financial Reporting Standards IFRS [2008], updated as of March 28, 2014.

**What is the guidance in IFRS 3 for recognizing and measuring identifiable assets acquired and liabilities assumed in a business combination?**

IFRS 3 requires the identifiable assets acquired and liabilities assumed in a business combination to be measured at fair value at the acquisition date (paragraphs 10 and 18 of IFRS 3). There is an emphasis on recognizing all identifiable assets acquired and liabilities assumed, reflecting the IASB's desire for entities to fully consider the difference between identifiable intangible assets and goodwill. The treatment of goodwill, which is described further in this appendix, is different from the treatment of intangible assets with definite lives and the allocation of the purchase price among these items affects the emergence of future profits.

To qualify for recognition, identifiable assets and liabilities acquired must:

- Meet the definition of assets or liabilities (paragraph 11 of IFRS3); and
- Be part of what the acquirer and the acquiree exchanged in the business combination rather than the result of a separate transaction (paragraph 12 of IFRS 3). Examples of separate transactions that do not constitute part of the business combination include settlement of pre-existing relationship between the acquirer and acquiree and remuneration to employees or former owners of the acquiree for future services.

Applying the recognition principles may result in recognition of assets or liabilities that the seller had not recognised in its financial statements. The application of the recognition and measurement concepts in IFRS 3 for intangible assets and other acquired liabilities is discussed below. The recognition and measurement of tangible invested assets, such as assets arising from ceded reinsurance invested assets, is not in the scope of this IAN. It is worth noting that there are some exceptions to the use of fair value measurement; for example, liabilities from retirement benefit plans are measured according to IFRS guidance for pension liabilities.

**What are some examples of intangible assets arising from a business combination involving contracts in the scope of IFRS 17, and what are the accounting requirements?**

Several potential intangible assets could arise from a business combination involving contracts issued by insurers. These include, but are not limited to:

i. Renewal rights for existing short-duration contracts;

ii. Distribution systems or relationships;

iii. Customer relationships for long duration contracts;

iv. Service agreements;

v. Brand names, trademarks, and copyrights;

vi. Proprietary software or technology;

vii. Licenses to transact insurance business;

viii. Product approvals and registrations; and

ix. Value of liability guarantee.

The paragraphs below provide descriptions of some of the more common intangible assets identified in combinations of insurance entities and some related considerations.

The first step, as already noted, is to determine if the intangible asset can be recognized. If so, the entity determines the asset's fair value, whether it has a finite or indefinite useful life, and the appropriate technique for the amortization of the asset (for those with finite lives and subject to amortization). Full development of common valuation and amortisation methods is beyond the scope of this IAN. While specific possible amortisation approaches are described for these assets, it should be kept in mind that IAS 38 provides that the amortisation period used should reflect the pattern in which an asset's future economic benefits are expected to be consumed by the entity. If that pattern cannot be determined reliably, the straight-line method could be used. There is also the possibility that some intangible assets have indefinite lives, and hence the intangible asset would not be amortised but rather tested for recoverability, which is referred to as testing for impairment. The actuary typically works with accountants and other professionals, such as valuation experts, to assist in determining which other potential intangible assets should be recognised and how they should be measured, amortised, and tested for impairment.

<u>Value of renewal rights for existing short-duration contracts (also referred to as "customer lists" for short-duration contracts)</u>

A common situation in non-life and group life insurance is the establishment of an intangible asset related to the value of renewal rights of existing short-duration contracts. The fair value may be based on market pricing benchmarks if such transactions and related benchmarks are reasonably well established for the market in which the acquired business resides. In some markets, benchmarks are based on a percentage of the premiums in-force or a percentage of annual premium writings. Absent benchmarks, the fair value might be based on the expected future distributable earnings from renewal contracts, usually net of the cost of capital discounted at a market discount rate commensurate with the risk of the cash flows. Among the methods for amortisation that have been used are:

- In relation to expected distributable earnings used to derive the fair value estimate; and
- Based on expected premiums from future renewals.

<u>Value of distribution systems/relationships</u>

The value associated with a distribution system may be significant, especially for distribution arrangements involving contingent commissions, business processing, and purchases of third-party intermediaries. Fair values of such systems might be derivable from cash flow models and from valuation specialists. Two of the possible amortisation methods that have been used for future business are 1) in relation to expected distributable earnings and 2) proportional to new business premiums.

Customer relationships and customer list – long duration contracts

Selling unrelated contracts to existing customers may provide the basis for an intangible asset, or it may be included in goodwill depending on the facts and circumstances. Care should be taken not to double count the value the asset related to a customer relationship and the value of a distribution system, if the considerations relate to the same future contracts and cash flows.

Service agreements

When a seller has entered into third-party contracts for certain services like claims administration, the acquirer considers whether an intangible asset might exist. There may be an intangible asset for the service component of investment or insurance contracts when this component is separated for recognition and measurement. Due consideration is given to whether the terms of such agreements are at, below, or above current market rates. The intangible asset, if any, may relate to the amount in fees that represent an above-market margin.

Amortisation methods historically used for such intangibles include:

i. In relation to the net revenue (i.e., fees charged less costs to provide the service) earned for providing the service; and

ii. ii. On a straight-line basis over the contract period.

Brand names, trademarks, copyrights

The entity being acquired may have a legal right to certain items (such as identifying names, slogans, and logos) that would qualify for separate recognition as intangible assets. Identifying the additional cash flows associated with such items may prove difficult. Amortisation might be based on the projected cash flows used to estimate the fair value. However, some legal rights may be renewable indefinitely or owned outright leading to the conclusion that the intangible should not be amortised.

Proprietary software or technology

Some insurers have developed expert systems that can be separately recognised as having value. Such systems can include underwriting, distribution/cross selling, and investment management. Amortisation of these systems-related intangible assets might be a straight line over an assumed lifetime of the system.

Licenses to transact insurance business

Paragraph 88 of IAS 38 requires entities to assess whether intangible assets have either a finite useful life or indefinite useful life. Licenses might be viewed as having an indefinite useful life such that their value is not amortised over time, although they may be subject to an impairment test. Their value might be derivable from market transactions for shell entities or from brokers in that market.

Product approvals or registrations

Product forms that have been approved for issue in certain jurisdictions can be determined to be intangible assets. The value could be viewed as the alternative cost to develop the same product and go through the approval process. Alternatively, the value could be viewed as something more if the product is in a niche market with limited access. Amortisation of the value could be based on the anticipated revenues expected from the sales of the new product.

**How does the entity account for goodwill or for a gain from a bargain purchase?**

IFRS 3 requires recognition of goodwill as of the acquisition date. Goodwill is the excess of the consideration transferred over the net of the identifiable assets and liabilities acquired. Identifiable assets here include those intangible assets that have been recognized in connection with the acquisition. Goodwill implicitly includes intangible assets that do not satisfy the criteria for recognition (paragraph 32 of IFRS 3).

Consideration may include not only cash but also equities, future consideration, and other types of compensation, and thus the determination of the value of consideration can become complex. IFRS 3 provides some guidance on determining the value of consideration transferred. Of particular note is the fact that transaction costs (such as legal, advisory, or accounting fees associated with the transaction) are not part of the consideration, per paragraph 53 of IFRS 3.

Goodwill represents a payment made by the acquirer in anticipation of future economic benefits from assets that are not capable of being individually identified and separately recognised. The value of goodwill need not be justified but is subject to tests of impairment. Goodwill is not amortised under IFRS. Goodwill is to be measured subsequently at the amount recognised at the acquisition date less any accumulated impairment losses. The goodwill carrying amount is required to be tested for impairment in accordance with the requirements of IAS 36 Impairment of Assets (paragraph B63 of IFRS 3).

The excess of the consideration transferred over the net of the identifiable assets and liabilities acquired may be negative. In this case, the acquirer reassesses the fair value of acquired assets and liabilities to be sure that all acquired assets and assumed liabilities have been identified, recognised, and measured properly. If, after making adjustments for the reassessment, the excess remains negative, a bargain purchase is said to have occurred, and there is no goodwill. The gain on the business combination is recognised in the acquirer's profit and loss in the period in which the acquisition takes place (paragraphs 34-36 of IFRS 3).

**Can there be a deferred tax asset or liability as a result of a business combination or other transfer?**

The guidance for deferred taxes is found in IAS 12. The fair value of acquired assets and liabilities assumed in a business transaction may be different from the tax value of the respective assets or liabilities. Temporary differences arise from the business combination when the tax bases of the identifiable assets acquired and liabilities assumed are not affected by the business combination or are affected differently. For example, the initial value of insurance contracts acquired in a business combination is fair value, but the tax basis of the contracts may remain at the basis that it had to the seller. This difference is generally a taxable

temporary difference that gives rise to a deferred tax asset or liability (paragraph 19 of IAS 12). The deferred tax asset or liability is the amount of the difference multiplied by the tax rate that is expected to apply when the difference reverses. Hence, the calculation may require a projection of the reversal of the difference if it is necessary to reflect varying tax rates. There is no discounting in the calculation of a deferred tax asset or liability.

The resulting deferred tax asset or liability affects goodwill (paragraph 66 of IAS 12). When a deferred tax asset or liability is recognized as a result of a difference between the fair value of an item and its tax value in a business combination, this difference is considered in the determination of the goodwill or the amount of the bargain purchase gain.

The recognition of a deferred tax asset depends on the entity being able to assert that the asset is recoverable. A deferred tax asset is generally recognised for deductible temporary differences to the extent that it is probable that taxable profit will be available against which the deductible temporary difference can be utilized. The carrying amount of a deferred tax asset is reviewed at the end of each reporting period. The entity reduces the carrying amount of a deferred tax asset to the extent that it is no longer probable that sufficient taxable profit will be available to allow the benefit of part or all of that deferred tax asset to be utilized. Any such reduction can be reversed to the extent that it subsequently becomes probable that sufficient taxable profit will be available for the asset to be utilised (paragraph 27 of IAS 12).

**What are the disclosure requirements related to business combinations?**

Disclosure guidance for business combinations is found in paragraphs B64-B67 of IFRS 3. The disclosures include both qualitative and quantitative notes that “enable users of [the entity’s] financial statements to evaluate the nature and financial effects of the business combination”. The disclosures do not supplant disclosures required by IFRS 17. It may be necessary to make some of the disclosures for the acquired business separately. Although not explicitly stated in IFRS 17 or in IFRS 3, these disclosures may apply to transfers as well.

## Chapter 12 – Transition

Before consulting this chapter, be sure to read the introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

**12.A. What does this chapter address?**

This chapter considers the one-time event of presenting statements applying IFRS 17 for the first time. The chapter has four sections: an overview and then a section for each of the three transition approaches described in IFRS 17 – the retrospective approach of IAS 8 and the alternative approaches introduced by IFRS 17, modified retrospective and fair value. The chapter includes a sample timeline. This chapter also references content from Chapter 10 – Fair Value.

**12.B. Which sections of IFRS 17 address this topic?**

Paragraphs 114-116 and Appendix C of IFRS 17 provide guidance on this topic.

Paragraphs BC372-BC407 also provide background on the subject.

**12.C. What other IAA documents are relevant to this topic?**

None

### Overview

**12.1. Where does the IASB describe the requirements for transition of the in-force insurance contracts or liabilities from current accounting standards to IFRS 17?**

The effective date, requirements, and approaches are described in Appendix C of IFRS 17.

The transition requirements apply when an entity first applies IFRS 17.

**12.2. What is the effective date of IFRS 17?**

IFRS 17 applies to annual reporting periods beginning on or after 1 January 2023, with early application permitted. The start of the annual reporting period in which an entity first applies IFRS 17 is called the "*date of initial application*". Some jurisdictions may adopt other effective dates and may limit early adoption.

**12.3. What IFRS 17 comparative information is required?**

There is a requirement to provide IFRS 17 financial statements as of the beginning of the period immediately preceding the date of initial application (comparatives).

The dates that follow apply for entities with quarterly financial reporting and an assumed date of initial application of 1 January 2023. Analogous dates would apply in other situations. On 31 March 2023, the entity will report the following on the new IFRS 17 basis:

- the 31 December 2021 (1 January 2022) opening balance information needed to prepare the comparative information;

- The statement(s) of financial performance for the 3-month period ending 31 March 2022;
- The 31 March 2022 statement of financial position will not be presented but will be necessary to the extent needed to prepare the 31 March 2022 statement(s) of financial performance;
- The 31 December 2022 statement of financial position;
- The statement(s) of financial performance for the 3-month period ending 31 March 2023; and
- The 31 March 2023 statement of financial position.

Further, on 31 March 2023, the entity will provide the disclosures required in paragraphs 93-132.

**12.4. Can more than one year of IFRS 17 comparative information be presented?**

Yes, an entity is permitted to present more than one year of IFRS 17 comparative information (paragraphs C25-C28). The beginning of the earliest adjusted comparative period presented (which would be the beginning of the period immediately preceding the date of initial application when only one year of comparative information is presented) is called the "transition date". In the example shown in question 12.3, the transition date would be January 1, 2022. If an entity chooses to present two years of comparative information (both of which are based on IFRS 17), the transition date would be January 1, 2021. See paragraphs C2 and C25.

**12.5. If provided, how is comparative information for earlier periods presented?**

If the comparative information and disclosures for earlier periods are adjusted by applying IFRS 17, question 12.3 applies, except the disclosures in paragraphs 93-132 are not required. If the comparative information and disclosures for earlier periods are unadjusted, paragraph C27 requires the entity to "*clearly identify the information that has not been adjusted, disclose that it has been prepared on a different basis, and explain that basis.*"

**12.6. If the implementation of IFRS 9 is deferred until the implementation of IFRS 17, what is the interaction with the IFRS 17 comparative financial statements?**

IFRS 9 does not require comparative financial statements and does not allow comparatives that require hindsight to be presented. However, the implementation of IFRS 9 (e.g., the designation of assets) might be different under IFRS 17 than under the current financial reporting standards. If so, the IFRS 17 comparative financial statements would be more meaningful if asset values under IFRS 9 were also restated. The entity would therefore be prepared to present IFRS 9 comparatives without the use of hindsight. Assuming the above timeline with one year of comparatives, the re-designation of assets under IFRS 9 would be as of 31 December 2021.

**12.7. If IFRS 9 is implemented before IFRS 17, are financial assets re-designated when IFRS 17 is implemented?**

The guidance for re-designation and related disclosures is in paragraphs C29-C33. If there are assets designated as fair value through profit or loss to avoid an accounting mismatch, that designation must be revoked if the accounting mismatch no longer exists under IFRS 17. Otherwise, re-designation of assets is permitted but not required.

As described in question 12.6, the IFRS 17 comparative financial statements would be more meaningful if presented with the implementation of IFRS 9 that will be adopted with IFRS 17.

**12.8. What time period does the transition guidance cover?**

The transition guidance applies to all insurance contracts or liabilities in force at the transition date, which is 31 December 2021 in the preceding timeline. All insurance contracts issued after that date would be subject to IFRS 17.

**12.9. In addition to IFRS 17, what other guidance applies to transition?**

Implementing IFRS 17 is considered a change in accounting policy, so IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors* applies, except, per paragraph C3, the entity need not disclose the quantitative information required by paragraph 28(f) of IAS 8.

**12.10. What is the impact on previous business combination balances of paragraph C4(b) of IFRS 17?**

Paragraph C4(b) requires the entity to derecognise all balances that would not have existed had IFRS 17 always applied. This would include balances arising from business combinations that would not have existed had the business combination taken place under IFRS 17. For example, value of business acquired (VOBA) balances will be derecognised, but goodwill balances will be unchanged at the transition date.

See question 12.23 for the treatment of incurred claims acquired in a transfer or business combination.

**12.11. What is to be measured or determined at transition?**

At the transition date, the following is required for each group of insurance contracts ("group"):

- the carrying value of the liability (or asset) for remaining coverage, with separate measurement of the present value of future cash flows, risk adjustment for non-financial risk, and, where applicable, the CSM or loss component;
- the liability for incurred claims, with separate measurement of the present value of future cash flows and the risk adjustment for non-financial risk;
- the "locked-in discount rates", which are the discount rates used for CSM accretion and CSM adjustments;

- the accumulated other comprehensive income ("OCI"), if the OCI option is elected;
- the balance of unamortised insurance acquisition cash flows for groups recognised at the transition date (unless the fair value approach is used), and
- any asset for insurance acquisition cash flows incurred before the transition date but allocated to groups or contracts that are expected to be recognized after the transition date. The entity is not required to assess recoverability of these assets (paragraph C4(aa).

**12.12. How should these items be measured or determined?**

Appendix C describes three approaches for transition: full retrospective, modified retrospective, and fair value.

The measurement of fulfilment cash flows at the transition date is a straightforward application of paragraphs 33-37. However, the CSM or loss component, the locked-in discount rates, the accumulated OCI and the balance of unamortised insurance acquisition cash flows all require information from the date of initial recognition, which may be many years before the date of transition. These items are therefore the focus of the transition guidance.

**12.13. How does the entity decide which approach to use for each group of contracts?**

As set out in paragraph C5, the full retrospective approach must be used unless it is impracticable to do so, in which case the entity must choose between the modified retrospective approach and the fair value approach. However, if reasonable and supportable information necessary to apply the modified retrospective approach is not available, the fair value approach must be used.

For the remainder of this section, "*available information*" should be read as "*reasonable and supportable information that is available without undue cost or effort*".

Paragraph C5A allows an entity to apply the fair value approach for a group of contracts with direct participation feature if and only if the entity chooses to apply the risk mitigation option in paragraph B115 prospectively from the transition date and the entity has used derivatives, non-derivative financial instruments measured at fair value through profit or loss, or reinsurance held before the transition date.

**12.14. How does an entity decide which approach to use for an asset for insurance acquisition cash flows?**

As set out in paragraph C5B, the full retrospective approach must be used unless it is impracticable to do, in which case the entity must choose between the modified retrospective approach or the fair value approach.

**12.15. How does the entity identify groups of contracts at transition?**

Paragraphs 14-24 describe the criteria for identifying groups. Under the full retrospective approach, identification of groups requires the assessment of these criteria as at the date of initial recognition of the contracts in each group. If this information is not available or

cannot be reasonably estimated, the full retrospective approach would not be used. Identification of groups under the modified retrospective approach and the fair value approach are described in later questions of this chapter.

**12.16. What other information is needed to use the full retrospective approach?**

See questions 12.24 to 12.30. If any material information is not available or cannot be reasonably estimated, the full retrospective approach would not be used.

**12.17. Would multiple approaches be used on a single group of contracts?**

For a group, only one approach would be applied.

**12.18. What does impracticable mean?**

IAS 8 states:

*"Applying a requirement is impracticable when the entity cannot apply it after making every reasonable effort to do so. For a particular prior period, it is impracticable to apply a change in an accounting policy retrospectively or to make a retrospective restatement to correct an error if:*

*(a) the effects of the retrospective application or retrospective restatement are not determinable;*

*(b) the retrospective application or retrospective restatement requires assumptions about what management's intent would have been in that period; or*

*(c) the retrospective application or retrospective restatement requires significant estimates of amounts and it is impossible to distinguish objectively information about those estimates that:*

*I. provides evidence of circumstances that existed on the date(s) as at which those amounts are to be recognised, measured or disclosed; and*

*II. would have been available when the financial statements for that prior period were authorised for issue from other information."*

Effectively, this requires the entity to demonstrate that although it has made every reasonable effort to gather the necessary information to enable it to determine the required elements retrospectively, that information is not available, or not available in a form that would enable it to be used without undue cost and effort. Information might be unavailable for a variety of reasons including:

- the information is no longer in the entity's possession;
- the information is available but outside the entity's normal retention policy and so might not be complete;
- the entity has the information but is unusable because of technological constraints;
- the need to determine what decisions management might have taken in the past; and

- the information requires hindsight to understand management's intent or the entity's view.

Paragraph BC378 gives examples of items needed for retrospective application for which measurement would often be impracticable.

**12.19. Are separate disclosures required for groups using different approaches?**

Yes. Paragraphs 114-116 describe the required disclosures.

**12.20. For measurement at a date subsequent to the transition date, can new contracts be added to the groups established at the transition date?**

For groups measured at transition using the full retrospective approach, new contracts can be added to the groups established at transition if consistent with paragraphs 14-24D (e.g., if the group established at transition only covers 6 months of issues the group could continue until the full year maximum is reached).

For groups measured at transition using the modified retrospective approach or the fair value approach, the disclosure requirements of paragraphs 114-116 may prohibit new contracts being added to such groups.

**12.21. What transition requirements are different for groups of insurance contracts with (vs. without) direct participation features?**

The locked-in discount rates are not needed.

**12.22. What transition requirements are different for groups of contracts measured using the premium allocation approach?**

For the liability for remaining coverage, there is no risk adjustment or CSM or loss component to be determined at transition. Also, the locked-in discount rates are needed only if the group has a significant financing component and the liability for remaining coverage reflects the time value of money and financial risk (paragraph 56).

**12.23. What transition requirements are different for liabilities for incurred claims?**

There is no CSM or loss component for liabilities for incurred claims. The locked-in discount rates are not needed for CSM accretion or future CSM adjustments and so is only required if the OCI option is elected.

For groups using the premium allocation approach, the locked-in discount rates for the liability for incurred claims are based on the incurred date rather than the date of initial recognition of the group.

A liability for incurred claims shall be classified for claims settlement incurred before acquisition of transferred contracts. Any post-transition contracts are measured as a liability for remaining coverage.

## The Full Retrospective Approach

**12.24. Are simplifications and approximations permitted when applying the full retrospective approach?**

The full retrospective approach involves looking back to the date of initial recognition and determining the liability (including the CSM or loss component) on that date as if IFRS 17 had been in effect. Then, to determine the CSM or loss component at the transition date, the CSM or loss component at the date of initial recognition would be adjusted through time as described in paragraphs 43-45 (CSM) and 50-52 (loss component) taking into account all contracts that were in-force at each reporting date between the date of initial recognition and the transition date.

Simplifications and approximations are permitted, if they do not have a material impact on the results. If any material information is not available and cannot be reasonable estimated, the full retrospective approach would not be used.

**12.25. How are groups of contracts identified?**

Paragraphs 14-24 describe the criteria for identifying groups. Under the full retrospective approach, identification of groups requires the assessment of these criteria as at the date of initial recognition of the contracts in each group.

**12.26. How are the locked-in discount rates determined?**

The locked-in discount rates are the discount rates that would have been established at the date of initial recognition as described in paragraph 36. For contracts with cash flows that vary based on the returns on any underlying items, the discount rates that would have applied to nominal cash flows that do not vary based on the returns on any underlying items are also required (paragraph B72(b)).

**12.27. How is the liability (and in particular, the CSM or loss component) determined at the date of initial recognition?**

Actual policy data for all contracts originally in the group would be used to estimate future cash flows. Information (e.g., assumptions and acquisition cash flows) required to estimate future cash flows, the risk adjustment, and the CSM or loss component would use only the information that would have been available at the date of initial recognition, without the use of hindsight.

In particular, the risk adjustment at the date of initial recognition would reflect the assessment of risk and the view of compensation required from the perspective of the entity as at the date of initial recognition. As noted in question 12.26, the discount rates would be the discount rates that would have been established at the date of initial recognition as described in paragraph 36.

**12.28. How is the CSM or loss component measured at the transition date?**

The CSM or loss component at the transition date would be measured by taking the CSM or loss component at the date of initial recognition (determined as in question 12.27) and

adjusting through time as described in paragraphs 43-45 (CSM) and 50-52 (loss component) of IFRS 17.

Note that all contracts that were in the group at the date of initial recognition would contribute to the determination of the liability at the date of initial recognition. Furthermore, cash flows and coverage units associated with these contracts would contribute to the adjusting through time of the CSM or loss component.

All adjustments (including amortisation) made to the CSM or loss component would use only the information that would have been available at the date each adjustment would have been made, without the use of hindsight. However, per paragraph C3(b), for groups of contracts with direct participation features, the option described in paragraph B115 would not be applied prior to the transition date. An entity may apply the option in paragraph B115 prospectively after the transition date if, and only if, the entity designates risk mitigation relationships at or before the date it applies the option.

The adjustments to the CSM or loss component would be made as at each reporting date between the date of initial application and the transition date. If the resulting CSM or loss component would be materially similar, adjustments could be made less frequently (e.g., annually).

**12.29. If the OCI option is elected, how is the accumulated OCI at the transition date measured?**

For groups for which changes in assumptions that relate to financial risk do not have a substantial effect on the amounts paid to the policyholder, the accumulated OCI at transition is the difference between the fulfilment cash flows measured using the locked-in discount rates and the fulfilment cash flows measured using the discount rates in effect at the transition date.

For groups for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to the policyholder but which are not insurance contracts with direct participating features where the entity holds the underlying items (i.e., when paragraph 88 applies), the systematic allocation that would have been adopted at the date of initial recognition (per paragraph B132) would be determined and applied retrospectively to measure the accumulated OCI at transition.

For groups with direct participation features where the entity holds the underlying items (i.e., when paragraph 89 applies), the accumulated OCI at transition would be measured retrospectively applying paragraphs B134-B136 and would be equal but opposite to the OCI of the underlying items (see paragraph C18(b)(ii))

For groups of contracts applying the premium allocation approach, the accumulated OCI at transition for the liability for incurred claims is the difference between the fulfilment cash flows measured using the discount rates in effect at the date the claim was incurred and the fulfilment cash flows measured using the discount rates in effect at the transition date.

**12.30. How is the balance of unamortised insurance acquisition cash flows determined?**

The balance of unamortised insurance acquisition cash flows would be determined by taking the insurance acquisition cash flows allocated to the group for the purpose of calculating the CSM or loss component at the date of initial recognition and removing the portion that would have been amortised under paragraph B125.

### The Modified Retrospective Approach

**12.31. When can the modified retrospective approach be used?**

When it is impracticable to apply the full retrospective approach to a group of contracts, the entity must choose to use either the modified retrospective approach or the fair value approach. However, the entity may only choose the modified retrospective approach if it can obtain reasonable and supportable information necessary to do so. If not, as per the requirements of IFRS17, the fair value approach shall be used.

**12.32. What is the modified retrospective approach trying to achieve?**

The objective of the modified retrospective approach is to achieve the closest outcome to the full retrospective approach possible.

**12.33. How does the entity achieve this objective?**

The entity would maximise the use of information that would have been used to apply the full retrospective approach.

Appendix C describes specific modifications, each of which is permitted only to the extent that the entity does not have reasonable and supportable information to apply the full retrospective approach (per paragraph C8). The assessment of which modifications are permitted would be made for each modification for each group. No other modifications are permitted.

**12.34. How are groups of contracts identified under the modified retrospective approach?**

If the information is available, groups would be identified applying paragraphs 14-24.

Paragraph 14 requires the identification of portfolios of insurance contracts ("portfolio"), where a portfolio comprises contracts that are subject to similar risks and managed together. To the extent information is not available, one of the permitted modifications of the modified retrospective approach allows the entity to identify portfolios based on how its business is managed at transition.

Furthermore, at the time of transition, information from the date of initial recognition about whether contracts would have met the definition of insurance contracts with direct participation features when they were issued may not be available. In this case, one of the permitted modifications of the modified retrospective approach allows the entity to use information available at transition to determine whether a contract meets the definition of an insurance contract with direct participation features.

Paragraphs 15-21 indicate that portfolios are split into three (or more if desired) groups based on the profitability of contracts at initial recognition. At the time of transition,

information from the date of initial recognition about the profitability of contracts issued in past years may not be available. In this case, one of the permitted modifications of the modified retrospective approach allows the entity to use information available at transition to assess the profitability of contracts for the purpose of grouping. That is, information about the profitability of contracts currently being issued can be applied to similar contracts issued in past years. However, such information must be reasonable and supportable, otherwise the fair value approach would be used. The longer it has been since the policy has been issued may be a consideration in determining if the information at transition is reasonable and supportable.

Paragraph 22 requires the groups determined per paragraphs 14-21 to be further divided so that contracts issued more than one year apart are not included in the same group. Paragraph C10 permits a modification of this requirement when information is not available.

**12.35. How are the locked-in discount rates determined under the modified retrospective approach?**

If contracts issued more than one year apart are included in the same group (i.e., the modification in paragraph C10 is made), the entity is permitted (paragraph C18(a)), to determine the locked-in discount rates using the discount rates in effect at the date of transition rather than the discount rates in effect at the date of initial recognition.

Otherwise, if available, the locked-in discount rates are the discount rates that would have been established at the date of initial recognition as described in paragraph 36.

If not available, one of the permitted modifications of the modified retrospective approach allows the entity to use the relationship between an observable yield curve and the current discount rates to estimate the discount rates as at the date of initial recognition as follows:

- If there is an observable yield curve that approximates the current discount rates for at least three years before the transition date, that observable yield curve at the date of initial recognition would be used to determine the locked-in discount rates.
- If such an observable yield curve does not exist, but there is an observable yield curve with a reasonably consistent spread to the current discount rates, the average spread between that observable yield curve and the current discount rates would be applied to that observable yield curve at the date of initial recognition to determine the locked-in discount rates. The average spread shall be an average over at least three years before the transition date (paragraph C13(b)).

**12.36. How is the CSM or loss component at the transition date measured under the modified retrospective approach?**

The full retrospective approach would be used to the extent information is available. The following modifications are permitted to the extent information is not available:

***Insurance contracts without direct participation features***

- **Discretionary cash flows** – The entity would use information at the transition date (rather than the date of initial recognition) to determine how to identify discretionary cash flows for the purpose of applying paragraphs B98–B100. That is, the entity would use policies on discretionary payments that apply at the date of transition if the policies on discretionary payments that applied at the time of initial recognition are not available.
- **Future cash flows** – The future cash flows at the date of initial recognition would be estimated as the future cash flows at the transition date (or an earlier date if the information is available) adjusted by the cash flows that are known to have occurred between the initial recognition and the transition date (or earlier date). Such known cash flows would include cash flows related to all contracts that would have been in the group at the date of initial recognition, including contracts that are no longer in force at the transition date.
- **Risk adjustment** – The risk adjustment at the date of initial recognition would be estimated as the risk adjustment at the transition date adjusted by the expected release of risk before that date. The expected release of risk would be based on the release of risk for similar contracts the entity is issuing at the transition date.
- **CSM amortisation** – The entity would estimate the amount of CSM recognised in profit or loss because of the transfer of services (paragraph 44(e)) between the date of initial recognition and the transition date by comparing the remaining coverage units (for contracts still in-force at the transition date) with the coverage units provided under the group of contracts before the transition date.
- **Loss component** – If there is a loss component at initial recognition, the entity would estimate the amount allocated to the loss component before the transition date using a systematic allocation consistent with the modifications adopted above.
- **Interim Financial Statements** – The entity shall determine the CSM or loss component at the transition date as if the entity had not prepared interim financial statements.
- **Acquisition Cash Flows** – The entity shall use the same systematic and rational method the entity expects to use after the transition date when applying paragraph 28A to any insurance acquisition cash flows paid before the transition date to (a) groups of contracts that are recognised at the transition date; and (b) groups of contracts which are expected to be recognised after the transition date. Insurance acquisition cash flows paid before the transition date that are allocated to a group recognised at the transition date adjust the CSM of that group. Other insurance acquisition cash flows paid before the transition date, including those allocated to a group of insurance contracts expected to be recognised after the transition date, are recognised as an asset applying paragraph 28B. If reasonable and supportable information is not available, the asset for insurance acquisition cash flows incurred

before the transition date but allocated to groups expected to be recognized after the transition date is set to nil (paragraph C14D).

- **Loss Recovery component** – A loss recovery component may be included under the modified approach if better information is not available.

***Insurance contracts with direct participation features***

The entity would measure the CSM at the transition date as the total fair value of the underlying items at the transition date minus:

- the fulfilment cash flows at the transition date, adjusted as described in paragraph C17(c); and
- (if CSM), minus the amount of CSM that relates to service provided before the transition date, estimated by comparing the remaining coverage units with the coverage units provided under the group of contracts before the transition;
- (if loss component), adjust the loss component to nil and increase the liability for remaining covering by the same amount.

If information is not available to apply a permitted modification, the fair value approach must be used.

**12.37. When should a loss component for reinsurance held be determined?**

For a group of reinsurance contracts held that provides coverage for an onerous group of insurance contracts and was entered into before or at the same time that the insurance contracts were issued, an entity shall establish a loss-recovery component of the asset for remaining coverage at the transition date. Per paragraph C16A, the loss-recovery component is determined by multiplying:

(a) the loss component of the liability for remaining coverage for the underlying insurance contracts at the transition date; and

(b) the percentage of claims for the underlying insurance group the entity expects to recover from the group of reinsurance contracts held.

In the absence of reasonable and supportable information to do the calculation, the entity shall not identify a loss-recovery component for the group of reinsurance contracts held.

**12.38. If the OCI option is elected, how is the accumulated OCI at the transition date measured under the modified retrospective approach?**

For contracts with direct participation features where the entity holds the underlying items (i.e., when paragraph B134 applies), the accumulated OCI at transition would be the accumulated OCI on the underlying items.

Otherwise, the accumulated OCI at transition would be:

- The difference between the fulfilment cash flows measured using the locked-in discount rates and the fulfilment cash flows measured using the discount rates in

effect at the date of transition for contracts for which changes in assumptions that relate to financial risk do not have a substantial effect on the amounts paid to the policyholder; and

- Nil for contracts for which changes in assumptions that relate to financial risk have a substantial effect on the amounts paid to the policyholder.

Furthermore, if contracts issued more than one year apart are included in the same group (i.e., the modification in paragraph C10 is made), the entity is permitted to determine the accumulated OCI for contracts without direct participation features as nil.

Note that the accumulated OCI would be nil whenever (per the first paragraph of question 12.35) the entity chooses to determine the locked-in discount rates as the discount rates in effect at the date of transition.

**12.39. How is the balance of unamortised insurance acquisition cash flows determined under the modified retrospective approach?**

The modification related to future cash flows in question 12.36 can be used if the information required to determine the balance of unamortised insurance acquisition cash flows retrospectively is not available (see question 12.30).

### The Fair Value Approach

**12.40. What is the fair value used for?**

The CSM or loss component at transition is determined as the fair value of a group at the transition date minus the fulfilment cash flows of the group as at the transition date.

**12.41. How are groups identified under the fair value approach?**

Per paragraphs C21-C22, the entity may choose to use the information available at transition rather than the information as at initial recognition to identify groups. This includes identifying portfolios.

Furthermore, per paragraph C23, the entity may choose not to apply paragraph 22 and thereby include contracts issued more than one year apart in a group.

Therefore, when applying the fair value approach at transition, the entity may identify portfolios based on how it manages the business at transition and determine that there are three groups per portfolio (onerous, no significant risk of becoming onerous, other), with no division of those groups by year of issue.

**12.42. How are the locked-in discount rates determined under the fair value approach?**

Per paragraph C23, the entity may choose to determine the locked-in discount rates as the discount rates in effect at the date of transition or the date of the initial recognition of the group.

**12.43. How is the fair value of a group as at the transition date measured?**

The fair value of a group is analogous to the consideration received/paid on portfolio transfer or business combination. It is the amount the entity would have to pay a third party to take on the obligations and risks of the group.

IFRS 13 Fair Value Measurement provides guidance on measuring fair value. See Chapter 10 for guidance on the application of IFRS 13 to insurance contracts on transition to IFRS 17.

The fair value at the date of transition would use observable market information, assumptions, economic information, views on the cost of risk, etc. as at the date of transition.

**12.44. How are the fulfilment cash flows of the group as at the transition date measured?**

The measurement of fulfilment cash flows at the transition date is described in paragraphs 33-37.

**12.45. For a group of reinsurance held contracts measured at fair value, when should a loss-recovery component be calculated?**

For a group of reinsurance contracts held, per paragraph C20A, an entity shall determine the loss-recovery component of the asset for remaining coverage at the transition date by multiplying:

a. the loss component of the liability for remaining coverage for the underlying insurance contracts at the transition date; and

b. the percentage of claims for the underlying insurance contracts the entity expects to recover from the group of reinsurance contracts held.

In the absence of reasonable and supportable information to do the calculation, the entity shall not identify a loss-recovery component for the group of reinsurance contracts held.

**12.46. If the OCI option is elected, how is the accumulated OCI at the transition date measured under the fair value approach?**

For contracts with direct participation features where the entity holds the underlying items (i.e., when paragraph B134 applies), the accumulated OCI at transition would be the accumulated OCI on the underlying items.

Otherwise, the entity can choose to set the accumulated OCI to nil or to measure the accumulated OCI retrospectively if the information is available.

**12.47. Is balance of unamortised insurance acquisition cash flows required under the fair value approach?**

The balance of unamortised acquisition expenses related to groups already recognised at the transition date is not required (per discussion at the February 2018 TRG paper AP06).

However, any asset for insurance acquisition cash flows incurred before the transition date but allocated to contracts or groups expected to be recognised after the transition date is required. See question 12.14.

## Section D – Other IFRS 17 Topics

This section includes two chapters that cover do not logically fall within any of the other sections. These are:

- Embedded Derivatives – Chapter 13
- Contract Modifications and Derecognition - Chapter 14

Chapter 13 discusses the issues which may arise in detecting and identifying embedded derivatives in such contracts which may need to be separated. This Chapter only considers the requirements under IFRS 17 for the separation of certain derivatives embedded in contracts subject to the scope of IFRS 17. Further information about embedded derivatives based on other IFRSs is found in IAN 11 Embedded Derivatives

Chapter 14 discusses what is and is not considered to be a contract modification and how to account for them. The chapter also discusses the circumstances under which a contract is derecognised.

## Chapter 13 – Embedded Derivatives

Before consulting this chapter, be sure to read the introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

### 13.A. What does this chapter address?

This chapter considers the requirements under IFRS 17 for the separation of certain derivatives embedded in contracts subject to the scope of IFRS 17. This chapter discusses the issues that may arise in detecting and identifying embedded derivatives in contracts that may need to be separated. Further information about embedded derivatives based on other IFRSs is found in the existing IAN 10 – Embedded Derivatives and Derivatives under International Financial Reporting Standards IFRS [2007].

### 13.B. Which sections of IFRS 17 address this topic?

Paragraphs 11(a) and B10 provide guidance on this topic.

### 13.C. What other IAA documents are relevant to this topic?

IAN 10 – Embedded Derivatives and Derivatives under International Financial Reporting Standards IFRS [2007].

### 13.1. What is a derivative and an embedded derivative?

Derivatives and embedded derivatives are defined in IFRS 9 in paragraph 4.3.1.

Paragraph 4.3.3 of IFRS 9 includes conditions for separating an embedded derivative, which are applicable according to paragraph 11(a) of IFRS 17 to insurance contracts and other contracts in the scope of IFRS 17. The guidance regarding definition of derivatives and embedded derivatives and the conditions for separation of those have not changed (other than changes for financial assets) from those in IAS 39 (albeit Appendix A to IAS 39 is not included in IFRS 9), and accordingly the contents of IAN 10 which refer to IAS 39, remain valid. This also applies to other aspects of accounting for embedded derivatives that are to be separated.

### 13.2. What are the IFRS 17 requirements on the accounting for embedded derivatives?

The requirements in IFRS 17 on the accounting for embedded derivatives are limited (see paragraph 11(a) as noted above). In particular, IFRS 17 states that IFRS 9 is applied to determine whether an embedded derivative is to be separated and, if so, how it is to be accounted for.

IFRS 9 defines a derivative as a "*financial instrument or other contract within the scope of*" IFRS 9 "*with all three of the following characteristics*:

*a. Its value changes in response to the change in a specified interest rate, financial instrument price, commodity price, foreign exchange rate, index of prices or rates, credit rating or credit index, or other variable, provided in the case of a non-financial variable that the variable is not specific to a party to the contract (sometimes called the 'underlying').*

*b. It requires no initial net investment or an initial net investment that is smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors.*

*c. It is settled at a future date"*

Paragraph 4.3.3 of IFRS 9 sets out the conditions that all need to be met for separating an embedded derivative where the host contract is not within the scope of IFRS 9 (as in the case of host insurance contracts within the scope of IFRS 17):

- Paragraph 4.3.3(a) requires that the economic characteristics and risks of the embedded derivative are not closely related to the economic characteristics and risks of the host. This is further expanded in Paragraphs B4.3.5 and B4.3.8 of IFRS 9, in particular, B4.3.8(h) states: "A derivative embedded in an insurance contract is closely related to the host insurance contract if the embedded derivative and host insurance contract are so interdependent that an entity cannot measure the embedded derivative separately (i.e., without considering the host contract)."
- Paragraph 4.3.3(b) requires that the separated component should meet the definition of a derivative on a standalone basis. This requirement might be seen as not met if the embedded derivative would be considered standalone under IFRS 17. This would be the case where the separate derivative still includes significant insurance risk transfer (see paragraph B10 of IFRS 17) and where the embedded derivative is a financial guarantee contract that is considered to fall within the scope of IFRS 17 (see paragraph 2.1(e) of IFRS 9).
- Paragraph 4.3.3(c) requires that the entire contract (i.e., host and embedded derivative) is not measured at fair value through profit or loss. This requirement might be seen to be met generally by contracts in the scope of IFRS 17, as the condition might be seen to refer explicitly to the measurement of the entire contract on an IFRS 17 basis that differs from fair value through profit or loss.

Paragraph B4.3.1 of IFRS 9 notes that paragraph 4.3.3 of IFRS 9

> *"requires the entity to identify any embedded derivative, assess whether it is required to be separated from the host contract and, for those that are required to be separated, measure the derivatives at fair value at initial recognition and subsequently at fair value through profit or loss."*

In addition, paragraph 4.3.5 of IFRS 9 states:

> *"Despite paragraphs 4.3.3 and 4.3.4, if a contract contains one or more embedded derivatives and the host is not an asset within the scope of this Standard, an entity may designate the entire hybrid contract as at fair value through profit or loss unless:*
>
> *(a) the embedded derivative(s) do(es) not significantly modify the cash flows that otherwise would be required by the contract; or*
>
> *(b) it is clear with little or no analysis when a similar hybrid instrument is first considered that separation of the embedded derivative(s) is prohibited, such as a prepayment option*

*embedded in a loan that permits the holder to prepay the loan for approximately its amortised cost."*

Embedded derivatives that are not required to be separated (under IFRS 9) are considered as part of the insurance contract and accounted for under IFRS 17.

**13.3. Are the IFRS 17 requirements on embedded derivatives different from those in IFRS 4?**

The requirements may be different.

Paragraph 8 of IFRS 4 stated that, as

*"an exception to the requirements in IFRS 9, an insurer need not separate, and measure at fair value a policyholder's option to surrender an insurance contract for a fixed amount (or for an amount based on a fixed amount and an interest rate), even if the exercise price differs from the carrying amount of the host insurance liability."*

This exception is not included in IFRS 17. This might be seen as a requirement to separate embedded derivatives of that kind, if they meet the conditions in paragraph 4.3.3. of IFRS 9.

In addition, the IFRS 4 implementation guidance (IG3 and 4) provided 20 examples of products, some with and some without embedded derivatives requiring separation. The IFRS 4 implementation guidance has not been included in the implementation guidance to IFRS 17. As a consequence, there may be a difference in the scope of embedded derivatives requiring separation. This might require an assessment based on the nature of individual contract types.

Experience of applying IFRS 4 showed that, in many countries, the majority of insurance products do not contain embedded derivatives that require separation. It is unclear yet whether the mentioned changes might have a different result.

**13.4. Are there specific disclosure requirements for embedded derivatives?**

For embedded derivatives that are not separated and so are part of an insurance contract, there are no additional specific disclosure requirements in IFRS 17. For reference in IFRS 4, paragraph 39(e) specifically required that information about the exposure to market risk be disclosed if such embedded derivatives are not measured and presented at fair value through profit or loss.

For embedded derivatives that are separated, the disclosure requirements are as set out in IFRS 9.

## Chapter 14 – Contract Modifications and Derecognition

Before consulting this chapter, be sure to read the introduction to this IAN, particularly the sections on references to IFRS 17, materiality and proportionality.

### 14.A. What does this chapter address?

This chapter considers the treatment under IFRS 17 of contract modification to insurance contracts, including reinsurance contracts, and de-recognition, including transfer to third parties.

This chapter discusses what is a contract modification and which of these:

- result in the derecognition of the original contract and recognition of the modified contract as a new contract; or
- can simply be treated as a change in estimates.

The chapter also describes:

- a possible approach for determining the premium when the modification is treated as a cancellation and replacement of the original contract; and
- application under the premium allocation approach (PAA).

### 14.B. Which sections of IFRS 17 address this topic?

Paragraphs 72–77 provide guidance on this topic.

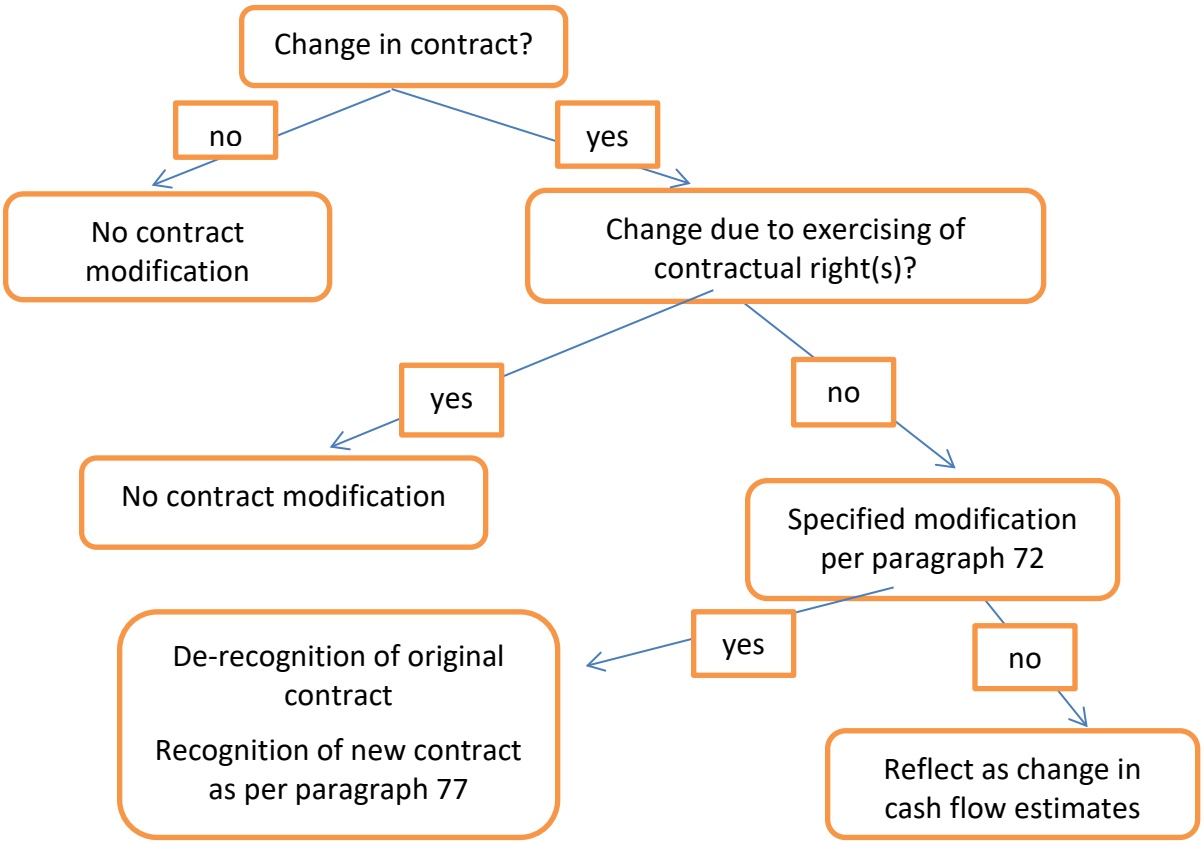
Paragraphs BC306 and BC316–322 also provide background on the subject.

### 14.C. What other IAA documents are relevant to this topic?

None

## Overview

The following flowchart is included to help in understanding whether or not there is a contract modification which needs to be accounted for. The flowchart is designed to be used in conjunction with the questions in this chapter.




## What is a contract modification?

### 14.1. What is a contract?

See Chapter 1 – Classification of Contracts.

### 14.2. How does IFRS 17 define a contract modification?

Paragraph 72 provides examples of contract modifications, which are changes to the legally enforceable terms of the contract, including "agreement between the parties to the contract or by change in law or regulation". The exercise of any rights or options available under the contract, by one or both parties, are not contract modifications and form part of the expected cash flows of the original contract (see paragraph 72).

### 14.3. What is a contract modification?

The following provides a non-exhaustive list of examples of what are and are not contract modifications for IFRS 17 purposes.

(a) The following generally require the agreement of both insurer and policyholder to take effect and, if this is the case, then they are a contract modification. However, if they arise from an option available to either the insurer or policyholder under the contract, then they are enforceable without the agreement of the other party and form part of the terms of the contract at issue. Note, any requirement to notify the other party in order to exercise the option, does not of itself imply their agreement is required.

(i) an increase or decrease in the nature or level of benefits under the contract, which could include changes to extend or reduce the period of cover under the contract (i.e., affect the contract boundary), unless they arise from the exercise of an underwritten option under the contract (see question 14.4), or they only affect coverage beyond the contract boundary (see Chapter 1 – Classification of Contracts);

(ii) the addition or removal of benefits under the contract;

(iii) the addition or removal of coverages under the contract;

(iv) the addition or removal of options or guarantees available under the contract;

(v) any change to premiums;

(vi) any change of insurance (including reinsurance) contracts terms and conditions requiring the consent of both parties; and

(vii) a change to contractual terms arising from change in regulation;

(b) The following are considered not to be a contract modification:

(i) the exercise of any options available to the policyholder under the terms of the contract (or law) within the contract boundary that do not require the agreement of the insurer. This does not include any requirement to notify the other party in order to exercise. Examples include:

- an option to renew the contract under the terms of the contract without further underwriting;
- an option to surrender the contract or to cease paying premiums while still receiving benefits under the contract;
- the exercise of a contractual right to suspend and later resume cover under the contract without a new risk assessment;
- an option to increase cover on renewal (e.g., with consumer price index) or at other times under the contract (e.g., guaranteed future insurance options) without further underwriting; and

- contracts arising from guaranteed insurability options, as these form part of the original contract terms and are neither a new contract nor a contract modification (e.g., guaranteed annuitisation option under a deferred annuity contract).

(ii) the exercise of any options available to the insurer under the terms of the contract (or law) within the contract boundary that do not require the agreement of the policyholder. The need to notify the other party to exercise the option does not mean their agreement is required. Examples include:

- changes to premium or benefits permitted under terms of the contract, law or regulation. Note,
  - if the policyholder has the right to terminate the contract upon such a change, this does not mean agreement of both parties is required for the insurer to exercise the right to make such changes, simply that it gives the policyholder rights. In both cases, they can be exercised without the agreement of the other party and hence these are not contract modifications; and
  - where the insurer has the right or practical ability to change the premium in such a way that the payment of that premium is outside of the boundaries of the contract (see Chapter 1 – Classification of Contracts), then it creates a new contract that is measured as such.

**14.4. What about the exercise of a contractual option to add a feature that is outside the contract boundary?**

A special case may occur if there is a contractual right to add a new feature to the original contract which could be outside the contract boundary when the entity is able to reprice or underwrite the contract for the additional feature added at the time it is added.

IFRS 17 treats cash flows outside the contract boundary as relating to future insurance contracts (paragraph 35), and such a new feature might be eligible to be treated as a new contract.

The treatment of contractual options and their interaction with the contract boundary was discussed at the IASB May 2018 TRG meeting (see AP03 Cash flows within the contract boundary and the IASB Summary of the May TRG Meeting).

This discussion raised the potential for a range of interpretations regarding the treatment of contractual options.

One view is that unless the contractual option of itself, even before exercise, qualifies as a separate contract, then it is a contractual feature of the insurance contract. (See IASB Feb 18 TRG paper AP01 - Separation of insurance components of a single insurance contract and IASB TRG summary for the limited circumstances in which this may apply.) In such a case, it is included in measurement of the original contract to the extent it is within the contract boundary, as the unit of account is the contract as a whole, and thus the contract boundary depends on the substantive rights and obligations as a whole.

The ability to reprice a part of the contract (e.g., the feature being added on exercise of the option) does not mean that part has a different contract boundary.

An alternative view is that if the terms of the addition were not guaranteed, then that of itself is sufficient for the addition to be outside the boundary of the original contract. An entity would need to decide whether to adopt the staff view or the alternative TRG view when assessing if there is any contractual obligation that needs to be measured prior to exercise. Also, it may not be practicable where the addition is not distinct (i.e., the cash flows of the new feature and the original contract are highly interrelated) to treat it as a separate new contract.

If not distinct, then the addition of new features that are outside of the contract boundary (e.g., because they can be underwritten at the time of exercise at an appropriate price for the change in insurance risk, if the alternative TRG view is taken) might be treated as a contract modification at the time of addition, as the ability to underwrite the new feature effectively means the consent of both parties is required.

If the contract modification is not a specified modification under paragraph 72, then paragraph 73 applies (i.e., the contract is not de-recognised and the changes in cash flows caused by the modification are treated as changes in estimates of fulfilment cash flows).

### Specified Modifications

**14.5. Which are the specified contract modifications that result in the derecognition of the original and recognition of the modified contract as a new contract?**

These are those contract modifications specified in paragraph 72 referred to here as "specified contract modifications" . The discussion in the Basis for Conclusions (see paragraphs BC317-BC320) indicates that the criteria in paragraph 72 capture modifications that the IASB sees as resulting in significantly different accounting treatment. For example, if the modified terms had applied at inception, they would have caused differences in the applicability of IFRS 17, the separation of components, the contract boundary (only if substantially different), or the applicability of the measurement model of the original contract (i.e., use of premium allocation approach, "PAA", vs. general measurement approach, "GMA").

The specified criteria in paragraph 72 are such that had the contract been written at inception as now modified, it would have:

- Been excluded from the scope of IFRS 17 (see Chapter 1 – Classification of Contracts);
- Been included in a different group from the one it was included in at initial recognition;
- A substantially different contract boundary;
- Different components separated, resulting in a different insurance contract for IFRS 17;

- Not qualified for the PAA that was applied to the original contract (see Chapter 7– Premium Allocation Approach); or
- Qualified (or ceased to qualify) for treatment as an insurance contract with direct participation features.

**14.6. How do contract modifications or the exercise of options available under the contract influence the contract boundary?**

The contract boundary is re-assessed in each reporting period (see paragraph B64) and ends when the criteria of paragraphs 34 are fulfilled (see Chapter 1 – Classification of Contracts). Options and contract modifications form part of the reassessment in each reporting period.

## Accounting for specified contract modifications

**14.7. How are specified contract modifications accounted for?**

The entity:

(a) derecognises the contract being modified from the group to which it was allocated at inception by:

- setting the contribution of its fulfilment cash flows, including the risk adjustment for non-financial risk and incurred claims, to the group to zero (paragraph 76 (a));
- adjusting the number of coverage units for expected remaining coverage (paragraph 76(c));
- adjusting the CSM of the group to the extent required by paragraphs 44(c) and 45(c) for the difference between (paragraph 77(a)):
  - the reduction in fulfilment cash flows of the group from setting that for the contract prior to modification to zero (paragraph 77(a)(i)); and
  - the premium it would have charged for a new contract issued at the date of contract modification with equivalent terms, net of any additional premium charged for the modification (paragraph 77(a)(iii)).
- per paragraphs 44(c) and 45(c), the CSM can only be adjusted to the extent that the adjustment does not reduce the CSM below zero, except in the case of reinsurance held. If there is a loss component already, paragraphs 44(c)(ii), 45(c)(iii) and 50(b) apply;

and

(b) recognises the modified contract as a new contract as at the date of modification under IFRS 17 assuming the net equivalent premium noted above was paid as at the date of modification (see paragraph 77(b)).

Paragraph 77 (a)(ii) does not apply here since it relates to transfers to a third party (see Q 14.14).

**14.8. If the insurer does not have contracts with equivalent terms, how is the premium determined?**

The premium is the price that the entity would have charged the policyholder if it had entered into a contract with equivalent terms at the date of the actual modification (see paragraph 77(a)(iii)), less any additional premium charged for the modification.

The assumptions used in determining the premium would usually be consistent with those used in determining the liability arising from the modified contract at the date of actual modification, except for the CSM.

For example, the premium might be determined as the sum of:

- the fulfilment cash flows (the unbiased expected present value of the future cash flows, excluding the premium being determined and including any taxes on the premium, acquisition costs for the modified contract, and an adjustment for risk);
- any other elements, other than profit targets, not included in fulfilment cash flows under IFRS 17 that the entity would normally include in setting premiums, e.g., general overheads and costs not directly attributable to a portfolio of insurance contracts and charge for capital; and
- the CSM after allowing for any elements not included in fulfilment cash flows, that reflects the entity's current approach to profit targets when pricing for similar business.

Note, this may not be the same as the fair value of the modified contract, and the premium possibly could differ from fair value because:

a. it uses entity-specific assumptions for some inputs, including the degree of risk aversion, whereas fair value typically uses market participant assumptions in all cases;

b. it excludes the entity's own non-performance risk, whereas fair value would include the entity's own non-performance risk; and

c. it includes the entity's targets for CSM, whereas fair value includes no such margin, although fair value implicitly includes a current value for any additional margin that market participants would require.

### Other contract modifications

**14.9. What other types of contract modifications are there?**

Apart from specified contract modifications, as per paragraph 72, there are other contract modifications. Examples could include, but are not limited to:

- Addition or removal of benefits, where they do not cause the contract to fall into another portfolio and hence different group;
- Increase or reduction in benefits, where they do not change grouping;

- Changes to what is covered, e.g., an extension or renovation under home insurance, or a new car under motor insurance; or
- Extension or reduction of the contract term, with no substantial change in benefit levels, provided this does not materially change the contract boundary or change eligibility for PAA.

**14.10. How are other contract modifications accounted for?**

Contract modifications not specified in paragraph 72 are accounted for by treating the resulting changes in the fulfilment cash flows (i.e., expected cash flows, risk adjustment) as a change in estimates as per paragraphs 40-52 (see paragraph 73).

**14.11. How are changes that are not contract modifications treated?**

Changes that are not contract modifications (see question 14.3) form part of the expected cash flows under the contract (see Chapter 2 – Estimates of Future Cash Flows) so long as they are within the contract boundary (see Chapter 1). Hence, they are considered when:

a. measuring the contract upon initial recognition under paragraphs 32 -35, paragraphs B61 and B62 (i.e., possible future changes due to changes that are not contract modifications are considered in the future cash flows at initial recognition); and

b. upon subsequent measurement under paragraph 40.

## Derecognition

**14.12. When can contracts be derecognised?**

Contracts can be derecognised only when:

- A specified contract modification occurs (see question 14.5), in this case the modified contract is treated as a new contract which assumes all obligations arising from the contract pre and post modification; or
- A contract is transferred to a third party (see paragraph 77 and question 14.14), this applies only when the contract is transferred as a whole including any obligation for incurred claims arising from past coverage, otherwise the contract in full has not been extinguished and cannot be derecognised as per paragraph 74; or
- All obligations under the contract are extinguished (see question 14.15). This includes not only the liability for future coverage but also for incurred claims arising from past coverage (see paragraph 74(a)).

**14.13. How are contracts that are transferred to a third party derecognised?**

In a similar way to the derecognition of a contract upon a specified contract modification (per the paragraph 72 criteria) that is the contract being transferred is derecognised from the group to which it was allocated at inception by:

- setting the contribution of its fulfilment cash flows (including the risk adjustment and incurred claims) to the group to zero;

- adjusting the number of coverage units (see paragraph 76(c))
- adjusting the CSM of the group for the difference between:
  - the reduction in the insurance contract liability of the group as a result of setting the fulfilment cash flows of the contract being transferred to zero; and
  - the premium charged by the third party for transfer of the contract.

**14.14. How are contracts derecognised other than due to a specified contract modification or transfer to a third party?**

In a similar way to the derecognition of a contract upon a specified contract modification (per paragraph 72 criteria), that is the contract is derecognised from the group to which it was allocated at inception by:

- setting the contribution to fulfilment cash flows (including the risk adjustment and incurred claims) to the group to zero;
- adjusting the number of coverage units (paragraph 76(c)); and
- adjusting the CSM of the group for the reduction in fulfilment cash flows of the group as a result of setting that element of the fulfilment cash flows relating to future service to zero in respect of the contract being derecognized.

**14.15. What if a modified contract was part of an onerous group?**

If the modification is not specified in paragraph 72, then paragraph 73 applies and the changes in estimates of fulfilment cash flows are treated in accordance with paragraphs 50 and 51 in the same way as any other subsequent change in fulfilment cash flows under IFRS 17.

If the modification is specified in paragraph 72, then it is treated as per paragraphs 74-77, (see Question 14.8) and there is no CSM to be adjusted in respect of the group to which the contract was allocated at inception (since this group is by prerequisite of the question onerous and hence there is no CSM), unless the modified contracts contained the ones that finally caused the group to be onerous, in this case a CSM might re-appear.

As noted in Question 14.8 the modification is allocated to the loss component of the group as required by paragraphs 44(c)(ii), 45(c)(iii) and 50(b) unless measured under PAA.

**14.16. What if only the obligation for future coverage is transferred to a third party?**

In this case, if there is remaining obligation for coverage already provided, the contract does not qualify for derecognition under paragraph 77 and is treated as a contract modification. However, if there is no liability for remaining coverage, then it would qualify for derecognition.

### Application to reinsurance and premium allocation approach

**14.17. How are modifications to reinsurance contracts accounted for?**

Reinsurance contracts are insurance contracts and the modifications to them are accounted for in the same way as for other insurance (paragraph 4), see also chapter 9.

**14.18. How do modifications to underlying insurance contracts affect the subsequent measurement of the reinsurance contract?**

To the extent that they change the expected cash flows under the reinsurance contract, they are:

- reflected in the re-measurement of the reinsurance contract (as per paragraphs 40–46 and 60–68); and
- not reflected in the CSM of the reinsurance contract to the extent that they do not adjust the CSM of the underlying group of insurance contracts (see paragraph 66(c)) and relate to future service.

**14.19. How are contract modifications and derecognition accounted for under the PAA?**

The requirements of paragraphs 73, 76 and 77 presume that the contract is being measured under the GMA. Where PAA applies to a contract (and in the case of a contract modification it continues to qualify for PAA), IFRS17 provides no definite guidance on the applicability of these paragraphs and the entity would have to develop an appropriate accounting policy as per paragraphs 10 to 12 of IAS 8.

Hence there are a number of various possible interpretations that could be adopted as applying to these circumstances.

For example, one possible, but unlikely, interpretation might be that they have no effect for PAA contracts.

Another example of a possible approach might be to apply the requirements of paragraphs 73, 76 and 77 appropriately modified for PAA, e.g.,

(a) For non-specified contract modifications, as per the answer to questions 14.12 and 14.15, (because a change in estimates under PAA only impacts the liability for incurred claims as per paragraph 40 (b)) this element would reflect this change if appropriate. However, if the contract modification where to:

  (i) cause the group of which it is a part to be viewed as onerous, paragraphs 57 and 58 would apply and liability for remaining coverage would also change as per these paragraphs; or

  (ii) cause the premiums received to change then this would be reflected in the liability for remaining coverage as per paragraph 55.

(b) For specified contract modifications, the answer to question 14.8 applies, modified for PAA as follows:

  (i) de-recognises the modified contract from the group of which it is part by setting the contribution of its carrying value to the group including liability for incurred claims to zero, consistent with paragraph 76 (a); and

  (ii) recognises the modified contract as a new contract as at the date of modification under IFRS 17 assuming the premium it would have charged for a new contract issued at the date of contract modification with equivalent

terms, net of any additional premium charged for the modification (paragraph 77(a)(ii)) was received as at the date of modification (paragraph 77(b)).

(c) When derecognising a contract, the answer to Question 14.15 applies, modified for PAA as per (b) (i) above.

(d) When derecognising a contract upon transfer to another party, the answer to Question 14.14 applies, modified for PAA as per (b)(i) above.

## Section E – Presentation and Disclosure

This Section includes three chapters that outline requirements for presentation and disclosure of financial information under IFRS 17 and provide guidance for actuaries on how these areas of communication may be interpreted.

**Before consulting this section and its three chapters, be sure to read the Introduction to this IAN, particularly the sections on References to IFRS 17, Materiality and Proportionality.**

This section comprises of the following chapters:

Chapter 15 – Definitions: i.e., introduction and explanation of key terms relevant to the financial reporting of (re)insurance contracts issued and reinsurance contracts held:

- Explanation of the term "Presentation"
- Explanation of the term "Disclosure"
- Explanation of additional key terms

Chapter 16 – Presentation requirements outlined in IFRS 17– *Insurance Contracts*

- General introduction
- Presentation requirements in the Statement of Financial Position
- Presentation requirements in the Statement of Financial Performance

Chapter 17 – Disclosure requirements under IFRS 17 – *Insurance Contracts*:

- General introduction
- Explanation of reconciled amounts (reconciliations), including the specific disclosure requirements under different measurement approaches.
- Discussion of disclosures in areas where significant judgements are required
- Discussion of specific disclosure requirements relating to recognising the nature and extent of risk

To the extent not covered in IFRS17 explicitly, the overarching principles for presentation of financial information are outlined in IAS 1 – *Presentation of Financial Statements*. Additional IFRS Standards might be applicable (such as IFRS 10 – *Consolidated Financial Statements*; IFRS 8 – *Operating Segments*, and IFRS 7 – *Financial Instrument: Disclosures*) as well as additional IAS Standards (such as IAS 8 - *Accounting Policies, Changes in Accounting Estimates and Errors*, and IAS 34 – *Interim Financial Reporting*) depending on the specific circumstances of the reporting entities.

In preparing this Section, we have leveraged from existing global publications by EY, KPMG, and PWC that focus on IFRS 17 Illustrative Financial Statements.

Note that there are certain accounting policy choices and/or options applied when preparing specific illustrative examples used in this chapter. Illustrations published by any of the

accounting firms referenced do not necessarily imply interpretations or accounting policy choices that an entity might elect when producing a set of financial statements.

**A. Which paragraphs within the IFRS 17 Standard address presentation and disclosure requirements?**

The following table contains an overview of the relevant paragraphs in the main body of IFRS 17 – Insurance Contracts:

| ID | Topic | Paragraphs in IFRS 17 |
|---|---|---|
| a) | Presentation in the statement of financial position | 78–79 |
| b) | Presentation in the statement of financial performance | 80–92 |
| c) | Disclosure requirements | 93–132 |

Paragraphs B120 - B137 provide additional guidance on the application of the presentation requirements.

Paragraphs BC328 - BC366 provide background on the topic of presentation and disclosure of (re)insurance contracts issued and reinsurance contracts held.

**B. What other IAA documents are relevant to this topic?**

None

**C. What might be the role of an actuary helping to produce IFRS 17 presentation and disclosures?**

Typically, the finance or accounting team will have ultimate responsibility for the information contained in the financial statements, including the disclosures. The actuary's role in preparing disclosures is likely to be a supporting role to the individual or team responsible for preparing the overall financial statements. This may include:

- Preparing numerical information specific to the disclosures that is not recorded in core finance systems or which is sourced from actuarial models – for example, historic claims development (and the reasons for such development) and sensitivities to insurance and market risks.
- Supporting the preparation of, or reviewing, qualitative information included in the disclosures – for example, qualitative information on how the entity manages the various types of risk to which it is exposed.
- Review of other qualitative or quantitative information included in the financial statements to support the overall integrity of the disclosures and to ensure that the information included presents a fair and accurate representation of the effect of the contracts within the scope of IFRS 17 at the reporting date.

# Chapter 15 – Introduction and Explanation of Key Terms Relevant to the Financial Reporting of (Re)insurance Contracts Issued and Reinsurance Contracts Held.

## 15.1. What is meant by the term 'presentation' in an IFRS 17 context?

To understand the presentation requirements for (re)insurance contracts issued and reinsurance contracts held under IFRS 17, it is relevant to consider IAS 1 – Presentation of Financial Statements. IAS 1 sets out the general requirements for presentation of financial statements within the IFRS Framework.

Paragraph 10 of IAS 1 sets out what a complete set of financial statements comprises:

- The statement of financial position, which is traditionally referred to as the balance sheet under other reporting bases, and
- The statement of financial performance, which is – in combination – referred to as the statement of profit or loss (P&L) and the statement of other comprehensive income (OCI).
- Statement of Changes in Equity
- Statement of Cash Flows

The statement of financial performance can be thought of as consisting of three key parts.

1. The first part presents any sources of income and expenses that are included in P&L and it ends with the assessment of P&L for the period.
2. The second part presents any sources of OCI (that do not contribute to P&L).
3. As a sub-total, both parts contribute to a total assessment of "comprehensive income" for the reporting period at the bottom of the statement.

The relevant paragraphs in IFRS 17 define the actual line items for both, the statement of financial position as well as the statement of financial performance.

## 15.2. What is meant by the term 'disclosure' in IFRS 17?

Presentation requirements generally do not provide sufficient information for investors and other users of financial statements to make elaborate economic and investment decisions. The IFRS Framework is focusing on the principles of creating sets of general-purpose financial statements. In addition, these require the disclosure of notes which have the objective of supporting a meaningful comparison between different entities.

Paragraph 93 specifies that the objective of the disclosure requirements within IFRS 17 is to give a "*basis for users of financial statements to assess the effect that contracts within the scope of IFRS 17 have on the entity's financial position, financial performance and cash flows*".

Disclosure items, in the context of IFRS 17, cover the following three key areas:

1. *the amounts recognised in its financial statements for contracts within the scope of IFRS 17 (see paragraphs 97 – 116);*
2. *the significant judgements, and changes in those judgements, made when applying IFRS 17 (see paragraphs 117 – 120); and*
3. *the nature and extent of the risks from contracts within the scope of IFRS 17 (see paragraphs 121 – 132).*

**15.3. What are the key terms relevant to this chapter?**

The statement of financial performance contains the P&L statement as well as the OCI Statement as outlined above.

With respect to these statements, the following key terms are introduced in IFRS 17.

- Insurance Service Result

  The insurance service result (paragraphs 83-86 and B120-B127), includes:

  - Insurance revenue: This quantity comprises the release of expected claim and other expense cash flows, including an allocation for acquisition expenses, the release of CSM and release of risk adjustment for the period; and
  - Insurance service expense: This quantity comprises the actual incurred claims and other expenses, including acquisition expenses matching the amounts included in insurance revenue, for the period.

- Net expense from reinsurance contracts held (Paragraph 86)

  The net expense from reinsurance contracts held consists separately of the:

  - Allocation of reinsurance premiums
  - Amounts recoverable from reinsurers for incurred claim

  IFRS 17 requires measuring and presentation of insurance contracts separately from reinsurance contracts. These requirements impact the presentation of reinsurance contracts held (which can be a net gain or a net loss) in the statement of financial performance for both, the insurance service result and the finance result.

  In presenting the net expense from reinsurance contracts held, IFRS 17 allows an entity to either present the amounts recovered separately from the amount of premium paid, or to present the net amount of these two components.

  There are differing interpretations of how Insurance Service Result is defined and presented with regard to reinsurance. This is discussed in Question 16.5.

- Insurance finance income or expenses (IFIE)

  The insurance finance income or expenses (refer to paragraphs 87 – 92 and B128 – B136) covers:

  a) the effect of the time value of money and changes thereof; and
  b) financial risk and changes thereof.

- Net insurance financial results

  Since reinsurance contracts are measured separately from insurance contracts, there will be a separate line item for reinsurance finance income or expense on the statement of financial performance.

  The net insurance financial results represent the netted amount of the IFIE positions as shown in the example in section 16.4 below:

  Note that the line-item profit before tax ultimately consists of the sum of the following:

  - Insurance service result, consisting of:
    - Insurance service result before reinsurance contracts held;
    - Net expense from reinsurance contracts held
  - Total investment income;
  - Net insurance financial result; and
  - Other income and expenses.

  This item will not be discussed further in this chapter.

### 15.4. What principles of materiality apply to IFRS 17 presentation?

There is an IFRS Practice Statement on Making Materiality Judgements (IFRS Practice Statement 2). Information on this can be found on the IASB website here: https://www.ifrs.org/issued-standards/materiality-practice-statement/

An entity applying IFRS 17 will already have an overall framework of setting materiality amounts in the context of producing a set of financial statements. IFRS 17 does not introduce the term materiality nor does it impose a higher hurdle or barrier for the production of a set of financial statements. Even though IFRS 17 might be perceived as more complex than other IFRSs, the same materiality judgements will apply as for the application of any other IFRSs.

# Chapter 16 – Presentation Requirements Outlined in IFRS 17 Insurance Contracts

## 16.1 What are the key areas of presentation required under IFRS 17?

IFRS 17 specifies minimum amounts of information that need to be presented on the face of the statement of financial position and statement of financial performance. These are supplemented by disclosures to explain the amounts recognised on the face of the primary set of financial statements.

IFRS 17 requires separate presentation of amounts relating to (re)insurance contracts issued and reinsurance contracts held in the set of primary financial statements. IFRS 17 does not limit an entity from providing further sub-divisions of the required line items. This may aid in making the relationship of the reconciliations to the face of the statement of financial position more easily understandable.

The table below summarises the presentation requirements under IFRS17 according to these areas.

| Areas required for presentation | Item | IFRS 17 Reference | IAN 100 Reference |
|---|---|---|---|
| (a) Presentation in the statement of financial position | Net asset or liability position carrying amounts | Paragraph 78 | 16.2 |
| | Assets for insurance acquisition cash flows | Paragraph 79 | 16.3 |
| (b) Presentation in the statement(s) of financial performance | General requirements | Paragraphs 80-82 | 16.4 |
| | Insurance service result (ISE) | Paragraphs 83-86 | 16.4 (a) |
| | Insurance finance income or expenses (IFIE) | Paragraphs 87-91 | 16.4 (b) |

### Presentation in the statement of financial position

## 16.2 What are the overarching presentation requirements on the statement of financial position for an entity issuing or holding insurance and/or reinsurance contracts?

For measurement, paragraph 24 indicates that an entity shall apply the recognition and measurement of a (re)insurance contract at a group level Paragraph 78 sets out that an entity shall present separately in the statement of financial position the carrying amounts of:

a. Portfolios of insurance contracts issued that are net assets;

b. Portfolios of insurance contracts issued that are net liabilities;

c. Portfolios of reinsurance contracts held that are net assets; and

d. Portfolios of reinsurance contracts held that are net liabilities.

**16.3 How is the insurance acquisition cash flows arising from paragraph 28A presented on the statement of financial position?**

IFRS 17 requires an entity to consider acquisition costs in determining the expected profit of insurance contracts. According to paragraph 28B, the entity considers these costs by recognising them:

- as an asset until the contracts are recognised; or
- by including them in the cash flows expected to fulfil the insurance contracts if the group of contracts is already recognised.

In respect to the presentation of this asset, paragraph 79 requires an entity to add any asset for insurance acquisition cash flows to the carrying amount of the related portfolios. In other words, the asset is not presented separately on the statement of financial position.

## Presentation in the statement of financial performance

**16.4 What line items are required in the statement of financial performance?**

Paragraph 80 requires that, for insurance contracts, the entity includes the following line items in the statement of financial performance (discussed in Question 15.3)

a) Insurance Service Result

b) Insurance finance income or expenses (IFIE)

There are at least two interpretations of how reinsurance held is to be presented under IFRS 17. Under one interpretation, the net expense from reinsurance contracts held is treated as a separate expense category in determining the insurance service result. In another interpretation, an insurer first calculates the insurance service result before reinsurance contracts held, and then shows the net expense from reinsurance contracts held. Under this interpretation, the insurance service result is then the sum of:

a) the insurance service result (before reinsurance contract held); and

b) the net expense from reinsurance contracts held.

An example of the Financial Statements under the two interpretations is as follows:

Showing insurance service result before reinsurance

## Statement of profit or loss and other comprehensive income

**For the year ended 31 December 2021**

| In €000 | Notes | 2021 | 2020 *restated* | IAS 1.81A, IAS 1.9(d), IAS 1.10(b), IAS 1.51(b)-(e) IAS 1.29, IAS 1.32 IAS 1.104, IAS 1.46, IAS 1.45 |
|---|---|---|---|---|
| Insurance revenue | 6 | 2,581 | 2,293 | IAS 1.82(a)(ii), IFRS 17.83 |
| Insurance service expense | 12 | (1,541) | (1,411) | IAS 1.82(ab), IFRS 17.84 |
| **Insurance service result before reinsurance contracts held** | | **1,040** | **882** | |
| Allocation of reinsurance premiums | 7 | (448) | (546) | IFRS 17.86 |
| Amounts recoverable from reinsurers for incurred claims | | 279 | 348 | IFRS 17.86 |
| **Net expense from reinsurance contracts held** | 7 | **(169)** | **(198)** | IAS 1.82(ac), IFRS 17.82 |
| **Insurance service result** | | **871** | **684** | IFRS 17.80(a) |
| Interest revenue calculated using the effective interest method | | 831 | 622 | IAS 1.82(a)(i) |
| Other interest and similar income | | 366 | 299 | |
| Net fair value gains/(losses) on financial assets at fair value through profit or loss | | 104 | (14) | IFRS 7.20(a)(i) |
| Net fair value gains/(losses) on derecognition of financial assets measured at fair value through other comprehensive income | | 6 | - | IAS 1.82(aa) |
| Impairment loss on financial assets | | (5) | (2) | IAS 1.82(ba) |
| Net foreign exchange (expense) / income | | (50) | 22 | |
| **Total investment income** | **8** | **1,252** | **927** | |
| Insurance finance expenses for insurance contracts issued | 8 | (742) | (673) | IAS 1.82(bb), IFRS 17.87 |
| Reinsurance finance income for reinsurance contracts held | 8 | 98 | 119 | IAS 1.82(bc), IFRS 17.82 |
| **Net insurance financial result** | | **(644)** | **(554)** | |
| Other income and expense | | (210) | (191) | |
| **Profit before tax** | | **1,269** | **866** | |


## Statement of profit or loss and other comprehensive income

**For the year ended 31 December 2021**

| In €000 | Notes | 2021 | 2020 *restated* | IAS 1.81A, IAS 1.9(d), IAS 1.10(b), IAS 1.51(b)-(e) IAS 1.29, IAS 1.32 IAS 1.104, IAS 1.46, IAS 1.45 |
|---|---|---|---|---|
| Insurance revenue | 6 | 2,581 | 2,293 | IAS 1.82(a)(ii), IFRS 17.83 |
| Insurance service expense | 12 | (1,541) | (1,411) | IAS 1.82(ab), IFRS 17.84 |
| **Insurance service result before reinsurance contracts held** | | **1,040** | **882** | |
| Allocation of reinsurance premiums | 7 | (448) | (546) | IFRS 17.86 |
| Amounts recoverable from reinsurers for incurred claims | | 279 | 348 | IFRS 17.86 |
| **Net expense from reinsurance contracts held** | 7 | **(169)** | **(198)** | IAS 1.82(ac), IFRS 17.82 |
| **Insurance service result** | | **871** | **684** | IFRS 17.80(a) |


Source: EY's Illustrative Financial Statements

Showing reinsurance as a component of the insurance service result (along with the rest of the profit or loss statement) –

## Consolidated statement of profit or loss

| | | | Year ended 31 December | |
|---|---|---|---|---|
| IAS 1(10)(b),(10A), (51)(c),(113) | | Note | 20X4 | 20X3 |
| IFRS 17(80)(a),(83) IAS 1(82)(a) | Insurance revenue | 2.4.1 | 114,845 | 93,252 |
| IFRS 17(80)(a),(84) IAS 1(99) | Insurance service expenses | 2.4.1 | (101,256) | (81,959) |
| IFRS 17(82),(86) | Net expenses from reinsurance contracts held | 2.4.1 | (5,849) | (3,859) |
| IFRS 17(80)(a) | **Insurance service result** | | **7,740** | **7,434** |
| IFRS 7(20)(b) IAS 1(82)(a) | Interest revenue from financial assets not measured at FVTPL | 3.5 | 2,696 | 2,321 |
| | Net gains on FVTPL investments | 3.5 | 11,129 | 8,214 |
| IFRS 7(20)(a)(viii) | Net gains on investments in debt securities measured at FVOCI reclassified to profit or loss on disposal | 3.5 | 78 | 51 |
| IFRS 7(20)(a)(i) | Net change in investment contract liabilities | 3.4, 3.5 | (756) | (672) |
| IFRS 7(20A) IAS 1(82)(aa) | Net gains from the derecognition of financial assets measured at AC | 3.5 | 22 | 13 |
| IAS 40(76)(d) | Net gains from fair value adjustments to investment properties | 3.5 | 157 | 552 |
| IAS 1(82)(ba) | Net credit impairment losses | 3.5, 3.7 | (40) | (31) |
| | **Net investment income** | | **13,286** | **10,448** |
| IFRS 17(80)(b) | Finance expenses from insurance contracts issued | 3.5 | (7,228) | (3,804) |
| IFRS 17(80)(b),(82) | Finance income from reinsurance contracts held | 3.5 | 1,610 | 501 |
| | **Net insurance finance expenses** | | **(5,618)** | **(3,303)** |
| | **Net insurance and investment result** | | **15,408** | **14,579** |
| IAS 1(82)(a) | Asset management services revenue | | 1,133 | 888 |
| IAS 1(82)(b) | Other finance costs | | (2,283) | (1,962) |
| IAS 1(99),(103) | Other operating expenses | 5 | (3,949) | (3,099) |
| IAS 1(82)(c) | Share of profit of associates and joint ventures accounted for using the equity method | | 463 | 365 |
| | **Profit before income tax** | | **10,772** | **10,771** |
| IAS 1(82)(d) IAS 12(77) | Income tax expense | | 3,155 | 3,087 |
| IAS 1(81A)(a) | **Profit for the year** | | **7,617** | **7,684** |
| IAS 1(81B)(a) | **Profit attributable to** | | | |
| | Owners of Value Insurance Plc | | 7,451 | 7,480 |
| | Non-controlling interests | | 166 | 204 |
| IAS 33(66) | **Earnings per share for profit attributable to the ordinary shareholders (in CU per share)** | | | |
| | Basic earnings per share | | 0.35 | 0.39 |
| | Diluted earnings per share | | 0.32 | 0.36 |

Source: PWC's Illustrative Financial Statements

### 16.5 Are there specific presentation requirements for insurance revenue?

IFRS 17 requires that insurance revenue and insurance service expenses exclude investment components (refer to paragraphs 42(a), 84, 85,103(b)(i)), B120, B123(a)(ii), B124(a)(ii)). Paragraph 103 (c) requires that investment components excluded from

insurance revenue and insurance service expenses are disclosed separately in the reconciliations.

Paragraph B124 sets out that insurance revenue is for the reduction in the liability for remaining coverage because of services provided in the period. Consequently, only premiums in respect of service provided in the period would be included in revenue for that period. This may include premiums that have fallen due but have not yet been received, for example, from brokers where balances are settled quarterly or where adjustment premiums are paid at the end of the coverage period relating to changes in exposure across the entire reporting period.

### 16.6 What is included in insurance service expenses?

The items included in insurance service expenses are identified in paragraph 103b as.

i. Incurred claims (excluding investment components) and other incurred insurance service expenses;

ii. amortisation of insurance acquisition cash flows;

iii. changes that relate to past service, i.e., changes in fulfilment cash flows relating to the liability for incurred claims; and

iv. changes that relate to future service, i.e., losses on onerous groups of contracts and reversals of such losses.

An example is as follows:

**29. Insurance and reinsurance contracts (continued)**

**A. Movements in carrying amounts (continued)**

***ii. Life savings***

Insurance contracts

*Analysis by remaining coverage and incurred claims*

| In millions of euro | Note | 2021 Liabilities for remaining coverage: Excluding loss component | 2021 Liabilities for remaining coverage: Loss component | 2021 Liabilities for incurred claims | 2021 Total | 2020 Liabilities for remaining coverage: Excluding loss component | 2020 Liabilities for remaining coverage: Loss component | 2020 Liabilities for incurred claims | 2020 Total |
|---|---|---|---|---|---|---|---|---|---|
| **Opening liabilities** | | 67,699 | 2,571 | 334 | 70,604 | 63,590 | 2,424 | 338 | 66,352 |
| **Changes in the statement of profit or loss and OCI** | | | | | | | | | |
| **Insurance revenue** | | | | | | | | | |
| Contracts under the modified retrospective approach | [illegible] | (1,895) | - | - | (1,895) | (1,717) | - | - | (1,717) |
| Other contracts | | (596) | - | - | (596) | (424) | - | - | (424) |
| | [illegible] | (2,491) | - | - | (2,491) | (2,141) | - | - | (2,141) |
| **Insurance service expenses** | | | | | | | | | |
| Incurred claims and other insurance service expenses | | - | (40) | 371 | 331 | - | (75) | 323 | 248 |
| Amortisation of insurance acquisition cash flows | | 696 | - | - | 696 | 633 | - | - | 633 |
| Losses and reversal of losses on onerous contracts | | - | 8 | - | 8 | - | 44 | - | 44 |
| Adjustments to liabilities for incurred claims | | - | - | (8) | (8) | - | - | 12 | 12 |
| | | 696 | (32) | 363 | 1,027 | 633 | (31) | 335 | 937 |
| Investment components | | (7,374) | - | 7,374 | - | (6,230) | - | 6,230 | - |
| **Insurance service result** | | (9,169) | (32) | 7,737 | (1,464) | (7,738) | (31) | 6,565 | (1,204) |
| Net finance expenses from insurance contracts | N | 4,221 | 166 | 24 | 4,411 | 3,893 | 159 | 21 | 4,073 |
| Effect of movements in exchange rates | | (267) | (11) | (12) | (290) | 377 | 19 | 4 | 400 |
| **Total changes in the statement of profit or loss and OCI** | | (5,215) | 123 | 7,749 | 2,657 | (3,468) | 147 | 6,590 | 3,269 |
| **Cash flows** | | | | | | | | | |
| Premiums received | | 10,073 | - | - | 10,073 | 8,181 | - | - | 8,181 |
| Claims and other insurance service expenses paid, including investment components | | - | - | (7,737) | (7,737) | - | - | (6,594) | (6,594) |
| Insurance acquisition cash flows | | (686) | - | - | (686) | (604) | - | - | (604) |
| **Total cash flows** | | 9,387 | - | (7,737) | 1,650 | 7,577 | - | (6,594) | 983 |
| **Closing liabilities** | | 71,871 | 2,694 | 346 | 74,911 | 67,699 | 2,571 | 334 | 70,604 |

Source: KMPG's Illustrative Financial Statements

### 16.7 What is the IFIE and how can it be presented in the statement of financial performance?

IFIE is defined as the change in insurance contract liabilities arising from the effect of or changes to the time value of money (meaning, the unwinding of the discount applied to the fulfilment cash flows, changes in the discount rates applied to the fulfilment cash

flows, and the accretion of interest on the CSM), and the effect of financial risk or changes in financial risk.

An example is as follows:

Notes to the consolidated financial statements (continued)

**10. Net investment result**

The following table analyses the Group's net investment result in profit or loss and OCI.

| In millions of euro | Note | 2021 Life risk | 2021 Life savings | 2021 Participating | 2021 Non-life | 2021 Other | 2021 Total | 2020 Life risk | 2020 Life savings | 2020 Participating | 2020 Non-life | 2020 Other | 2020 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Investment return*** | | | | | | | | | | | | | |
| Interest revenue on financial assets not measured at FVTPL | (D) | 3,359 | 4,868 | 34 | 62 | 55 | 8,378 | 3,195 | 4,648 | 32 | 70 | 42 | 7,987 |
| Other investment revenue | (D) | 505 | 618 | 16,409 | 3,563 | - | 21,095 | 430 | 536 | 12,868 | 2,344 | - | 16,187 |
| Net impairment loss on financial assets | (E) | (130) | (188) | (2) | (4) | - | (324) | (157) | (209) | (2) | (6) | - | (374) |
| Amounts recognised in OCI | (X) | 1,223 | 1,354 | 11 | 15 | - | 2,603 | 812 | 904 | 4 | 7 | - | 1,727 |
| **Total investment return** | | 4,957 | 6,672 | 16,452 | 3,636 | 55 | 31,772 | 4,280 | 5,879 | 12,902 | 2,415 | 42 | 25,527 |
| **Net finance expenses from insurance contracts** | | | | | | | | | | | | | |
| Changes in fair value of underlying items of direct participating contracts | | - | - | (14,948) | - | - | (14,948) | - | - | (12,064) | - | - | (12,064) |
| Group's share of changes in fair value of underlying items or fulfilment cash flows that do not adjust the CSM | 29(E)(a) | - | - | 45 | - | - | 45 | - | - | 22 | - | - | 22 |
| Interest accreted | | (2,193) | (3,553) | - | (1,637) | - | (7,383) | (2,136) | (3,339) | - | (1,543) | - | (7,014) |
| Effect of changes in interest rates and other financial assumptions | | (881) | (828) | - | (5) | - | (1,714) | (806) | (680) | - | (6) | - | (1,491) |
| Effect of measuring changes in estimates at current rates and adjusting the CSM at rates on initial recognition | | 8 | 5 | - | - | - | 13 | (6) | (5) | - | - | - | (11) |
| Net foreign exchange loss | | (25) | (35) | - | (15) | - | (75) | (25) | (53) | - | (21) | - | (99) |
| **Total net finance expenses from insurance contracts** | (A), 29(A) | (3,091) | (4,411) | (14,903) | (1,657) | - | (24,062) | (2,973) | (4,073) | (12,042) | (1,569) | - | (20,657) |
| **Net finance income from reinsurance contracts** | | | | | | | | | | | | | |
| Interest accreted | | 9 | - | 100 | 264 | - | 373 | 8 | - | 83 | 246 | - | 337 |
| Other | | 5 | - | 18 | 6 | - | 29 | 4 | - | 24 | 9 | - | 37 |
| Net finance income from reinsurance contracts in Note 29(A) | | 14 | - | 118 | 270 | - | 402 | 12 | - | 107 | 255 | - | 374 |
| Effect of changes in non-performance risk of reinsurers | 29(A) | 6 | - | 17 | (22) | - | 1 | (2) | - | (14) | (17) | - | (33) |
| **Total net finance income from reinsurance contracts in the statement of profit or loss and OCI** | (A) | 20 | - | 135 | 248 | - | 403 | 10 | - | 93 | 238 | - | 341 |
| **Movement in investment contract liabilities** | 29 | - | - | (1,311) | - | - | (1,311) | - | - | (641) | - | - | (641) |
| **Movement in third party interests in consolidated funds** | 29 | - | - | (62) | - | - | (62) | - | - | (59) | - | - | (59) |
| | | 1,886 | 2,261 | 311 | 2,227 | 55 | 6,740 | 1,319 | 1,806 | 260 | 1,084 | 42 | 4,511 |
| **Represented by:** | | | | | | | | | | | | | |
| Amounts recognised in profit or loss | | 1,226 | 1,544 | 300 | 2,212 | 55 | 5,337 | 1,056 | 1,486 | 256 | 1,077 | 42 | 3,917 |
| Amounts recognised in OCI | | 660 | 717 | 11 | 15 | - | 1,403 | 263 | 320 | 4 | 7 | - | 594 |
| | | 1,886 | 2,261 | 311 | 2,227 | 55 | 6,740 | 1,319 | 1,806 | 260 | 1,084 | 42 | 4,511 |
| **A. Insurance finance income and expenses** | | | | | | | | | | | | | |
| Net finance expenses from insurance contracts | | | | | | | | | | | | | |
| Recognised in profit or loss | | (2,521) | (3,774) | (14,903) | (1,657) | - | (22,855) | (2,419) | (3,489) | (12,042) | (1,569) | - | (19,519) |
| Recognised in OCI | | (570) | (637) | - | - | - | (1,207) | (554) | (584) | - | - | - | (1,138) |
| | | (3,091) | (4,411) | (14,903) | (1,657) | - | (24,062) | (2,973) | (4,073) | (12,042) | (1,569) | - | (20,657) |

Source: KMPG's Illustrative Financial Statements

## 16.8 What accounting policy choices can an entity make with regards to the IFIE, and are there any exceptions?

The entity can include the entire IFIE for the period in the P&L statement, or it can disaggregate the IFIE for the period between P&L statement and OCI.

If the entity chooses to disaggregate the IFIE for the period between P&L and OCI, the entity must define a systematic basis (paragraph 88(b)) to determine the OCI component (note: IFRS 17 does not prescribe what basis to use. Paragraphs B130-B132 provide detail on the assumptions and accounting treatment required if the OCI option is used by the entity. The entity would normally agree the approach with its auditor. The choice differs depending on the nature of the contract, whether non-participating (non-VFA contract), or direct participating (VFA contract).

For disclosure requirements related to the disaggregation of IFIE between P&L and OCI, see questions 17.17-17.19.

## 16.9 If the entity chooses to disaggregate IFIE into P&L and OCI, how should this disaggregation be made?

For contracts without direct participating features, use the methodology outlined in paragraphs B130-133. For direct participating contracts (VFA) use the methodology outlined in B134-136.

An example is as follows:

## Statement of profit or loss and other comprehensive income

**For the year ended 31 December 2021**

| In €000 | Notes | 2021 | 2020 restated | IAS 1.81A, IAS 1.9(d), IAS 1.10(b), IAS 1.51(b)-(e) IAS 1.29, IAS 1.32 IAS 1.104, IAS 1.46, IAS 1.45 |
|---|---|---|---|---|
| Insurance revenue | 6 | 2,581 | 2,293 | IAS 1.82(a)(ii), IFRS 17.83 |
| Insurance service expense | 12 | (1,541) | (1,411) | IAS 1.82(ab), IFRS 17.84 |
| **Insurance service result before reinsurance contracts held** | | **1,040** | **882** | |
| Allocation of reinsurance premiums | 7 | (448) | (546) | IFRS 17.86 |
| Amounts recoverable from reinsurers for incurred claims | | 279 | 348 | IFRS 17.86 |
| **Net expense from reinsurance contracts held** | 7 | **(169)** | **(198)** | IAS 1.82(ac), IFRS 17.82 |
| **Insurance service result** | | **871** | **684** | IFRS 17.80(a) |
| Interest revenue calculated using the effective interest method | | 831 | 622 | IAS 1.82(a)(i) |
| Other interest and similar income | | 366 | 299 | |
| Net fair value gains/(losses) on financial assets at fair value through profit or loss | | 104 | (14) | IFRS 7.20(a)(i) |
| Net fair value gains/(losses) on derecognition of financial assets measured at fair value through other comprehensive income | | 6 | - | IAS 1.82(aa) |
| Impairment loss on financial assets | | (5) | (2) | IAS 1.82(ba) |
| Net foreign exchange (expense) / income | | (50) | 22 | |
| **Total investment income** | 8 | **1,252** | **927** | |
| Insurance finance expenses for insurance contracts issued | 8 | (742) | (673) | IAS 1.82(bb), IFRS 17.87 |
| Reinsurance finance income for reinsurance contracts held | 8 | 98 | 119 | IAS 1.82(bc), IFRS 17.82 |
| **Net insurance financial result** | | **(644)** | **(554)** | |
| Other income and expense | | (210) | (191) | |
| **Profit before tax** | | **1,269** | **866** | |
| Income tax expense | | (231) | (172) | IAS 1.82(d), IAS 12.77 |
| **Profit for the year** | | **1,038** | **694** | IAS 1.81A |
| **Other comprehensive income** | | | | |
| ***OCI to be reclassified to profit or loss in subsequent periods*** | | | | IAS 1.82A(a)(ii) |
| Change in fair value of financial assets | 8 | 179 | (35) | IFRS 7.20(a)(viii) |
| Amount reclassified to profit or loss | 8 | (1) | 2 | IFRS 7.20(a)(viii) |
| **Debt instruments at fair value through other comprehensive income** | 8 | **178** | **(33)** | |
| Insurance finance expenses for insurance contracts issued | 8 | (194) | 38 | IFRS 17.88(b), 89(b) |
| Reinsurance finance income for reinsurance contracts held | 8 | 56 | (9) | IFRS 17.82 |
| **Net insurance financial result** | | **(138)** | **29** | |
| Income tax relating to items that may be reclassified | | (8) | 1 | |
| **Total other comprehensive income** | | **32** | **(3)** | |
| **Total comprehensive income** | | **1,070** | **691** | |

Source: EY's Illustrative Financial Statements

## Notes to the Financial Statements

### 8. Total investment income and net insurance finance result

The table below presents an analysis of total investment income and insurance finance result recognised in profit or loss and OCI in the period:

| In €000 | 2021 Life contracts | Insurance related: Reinsurance contracts issued | Non-insurance related | Total | IFRS 17.110 |
|---|---|---|---|---|---|
| **Investment income** | | | | | |
| **Amounts recognised in profit or loss** | | | | | |
| Interest revenue calculated using the effective interest method | 831 | - | - | 831 | IFRS 7.20(b) |
| Other interest and similar income | - | 366 | - | 366 | |
| Net gains/(losses) on financial assets at FVPL | - | 104 | - | 104 | |
| Net gains/(losses) on derecognition of financial assets measured at FVOCI | 6 | - | - | 6 | IFRS 7.20(a)(i) |
| Impairment loss on financial assets | (5) | - | - | (5) | |
| Net foreign exchange income / (expense) | (50) | - | - | (50) | |
| **Total amounts recognised in the profit or loss** | **782** | **470** | **-** | **1,252** | |
| **Amounts recognised in OCI** | **178** | **-** | **-** | **178** | |
| **Total investment income** | **960** | **470** | **-** | **1,430** | |
| **Insurance finance income / (expenses) from insurance contracts issued** | | | | | |
| Interest accreted to insurance contracts using current financial assumptions | - | (289) | - | (289) | |
| Interest accreted to insurance contracts using locked-in rate | (507) | - | - | (507) | |
| Due to changes in interest rates and other financial assumptions | (195) | - | - | (195) | |
| Net foreign exchange income / (expense) | 55 | - | - | 55 | |
| **Total insurance finance income / (expenses) from insurance contracts issued** | **(647)** | **(289)** | **-** | **(936)** | |
| Represented by: | | | | | |
| Amounts recognised in profit or loss | (453) | (289) | - | (742) | |
| Amounts recognised in OCI | (194) | - | - | (194) | |
| **Reinsurance finance income / (expenses) from reinsurance contracts held** | | | | | |
| Interest accreted to reinsurance contracts using locked-in rate | 117 | - | - | 117 | |
| Due to changes in interest rates and other financial assumptions | 56 | - | - | 56 | |
| Changes in risk non-performance reinsurer | (6) | - | - | (6) | |
| Net foreign exchange income / (expense) | (13) | - | - | (13) | |
| **Reinsurance finance income / (expenses) from reinsurance contracts held** | **154** | **-** | **-** | **154** | |
| Represented by: | | | | | |
| Amounts recognised in profit or loss | 98 | - | - | 98 | |
| Amounts recognised in OCI | 56 | - | - | 56 | |
| **Total net investment income, insurance finance expenses and reinsurance finance income** | **467** | **181** | **-** | **648** | |
| Represented by: | | | | | |
| Amounts recognised in profit or loss | 427 | 181 | - | 608 | |
| Amounts recognised in OCI | 40 | - | - | 40 | |

Source: EY's Illustrative Financial Statements

For disclosure requirements related to the disaggregation of IFIE between P&L and OCI, see questions 17.17-17.19.

**16.10 If the entity has disaggregated the IFIE between P&L and OCI, how should IFIE, which are in the OCI, be classified when an entity transfers a group of insurance contracts or derecognises an insurance contract under paragraph 91?**

For all contracts except those with direct participation features (VFA contracts), the entity will reclassify any previously recognised OCI to P&L as a reclassification adjustment.

For contracts with direct participation features (VFA contracts), it will not reclassify any previously recognised OCI to P&L as a reclassification adjustment.

For disclosure requirements related to the disaggregation of IFIE between P&L and OCI, see questions 17.17-17.19.

**16.11 How should an entity treat exchange differences on changes in the carrying amount of groups of insurance contracts?**

The entity should include exchange differences on changes in the carrying amount of groups of insurance contracts in the P&L, unless they relate to changes in the carrying amount included in OCI, in which case they should be included in OCI (paragraph 92).

An example is as follows:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Finance income (expenses) from insurance contracts issued** | | | | | | | | |
| Changes in fair value of underlying assets of contracts measured under the VFA | - | - | (2,622) | - | - | - | - | (2,622) |
| Interest accreted | (3,265) | (2,380) | (34) | (506) | - | (503) | - | (6,688) |
| Effect of changes in interest rates and other financial assumptions | 827 | 464 | 2 | 100 | - | 15 | - | 1,408 |
| Effect of changes in FCF at current rates when CSM is unlocked at locked-in rates | 4 | 6 | - | (2) | - | - | - | 8 |
| Foreign exchange differences | - | - | - | 209 | - | - | - | 209 |
| **Finance expenses from insurance contracts issued** | **(2,434)** | **(1,910)** | **(2,654)** | **(199)** | **-** | **(486)** | **-** | **(7,665)** |
| **Finance income (expenses) from reinsurance contracts held** | | | | | | | | |
| Interest accreted | 2,218 | - | - | - | - | 11 | - | 2,229 |
| Effect of changes in interest rates and other financial assumptions | (616) | - | - | - | - | - | - | (616) |
| Effect of changes in FCF at current rates when CSM is unlocked at locked-in rates | (3) | - | - | - | - | - | - | (3) |
| **Finance income from reinsurance contracts held** | **1,599** | **-** | **-** | **-** | **-** | **11** | **-** | **1,610** |
| **Net insurance finance expenses** | **(835)** | **(1,910)** | **(2,654)** | **(199)** | **-** | **(477)** | **-** | **(6,075)** |

Source: PWC's Illustrative Financial Statements

## Chapter 17 – Disclosure Requirements Under IFRS 17 – Insurance Contracts

### 17.1 What are the key areas of disclosure required under IFRS 17?

Paragraph 93 states that an entity shall disclose qualitative and quantitative information about:

*a) the amounts recognised in its financial statements for contracts within the scope of IFRS 17 (see paragraphs 97-116);*

*b) the significant judgements, and changes in those judgements, made when applying IFRS 17 (see paragraphs 117-120); and*

*c) the nature and extent of the risks from contracts within the scope of IFRS 17 (see paragraphs 121-132).*

The table below summarise the disclosure requirements under IFRS 17 as issued by the IASB according to these areas.

| Areas required for disclosure | Item | IFRS 17 Reference | IAN 100 Reference |
|---|---|---|---|
| (a) Explanation of recognised amounts | General requirements | Paragraphs 97 – 99 | 17.2 |
| | Specific requirements under PAA | | 17.8 |
| | Specific requirements under other measurement methods (non PAA) | Paragraphs 100 – 109 | 17.6 |
| | IFIE disclosures | Paragraphs 110 - 113 | 17.14 |
| (b) Significant judgements | Inputs, assumptions and estimation techniques | Paragraph 117 | 17.16 |
| | Disaggregation of IFIE | Paragraph 118 | 17.14 |
| | Risk adjustment for non-financial risk | Paragraph 119 | 17.16 |
| | Yield Curve used to discount cashflows | Paragraph 120 | 17.16, 17.22 |
| (c) Nature and extent of the risks | General requirements | Paragraphs 121 – 126 | 17.23, 17.24 |
| | Concentration risk | Paragraph 127 | 17.23, 17.24 |

| | | | |
|---|---|---|---|
| | Insurance and market risks – Sensitivities | Paragraphs 128 - 129 | 17.23, 17.24 |
| | Insurance risks - claims development | Paragraph 130 | 17.23, 17.24 |
| | Credit risk | Paragraph 131 | 17.23, 17.24 |
| | Liquidity risk | Paragraph 132 | 17.23, 17.24 |
| (d) Transition arrangements | Transition Amounts | Paragraphs 114 - 116 | 17.15 |

**17.2 How should information be aggregated for disclosure?**

Information should be aggregated or disaggregated such that useful information is not obscured either by the inclusion of a large amount of insignificant detail or by the aggregation of items that have different characteristics.

Examples of aggregation bases that might be appropriate for information disclosed about insurance contracts are:

a. type of contract (for example, major product lines); or

b. geographical area (for example, country or region).

## Explanation of recognised amounts

**17.3 What is the objective of the reconciliation between opening and closing balance of the insurance contract liabilities?**

The objective is to provide different types of information about the insurance result.

Providing a reconciliation allows users to understand how the insurance contract liabilities changed during the period because of cash flows and income and expenses recognised in the statement of financial performance.

**17.4 How many reconciliations are required and how much detail is required in the reconciliation of the change in insurance contract liabilities during the period?**

The specific reconciliations required for disclosure vary according to the measurement approach adopted.

- Under all measurement approaches, an entity shall disclose reconciliations showing separately liabilities arising from claims already incurred and net liabilities for the remaining coverage component. Refer to question 17.6 and 17.7 for further detail.
- For measurement approaches for where the PAA has not been applied, an entity shall additionally disclose reconciliations for each component under the GMA. Refer to question 17.8 for further detail.

**17.5 How should the reconciliation of the change in insurance contract liabilities be broken down? Which line items should be in the reconciliation?**

Reconciliations should be split by:

a. Net liabilities for the remaining coverage component (excluding any loss component);

b. loss components; and

c. the liabilities for incurred claims.

Reconciliations should include the following line items:

a. insurance revenue;

b. insurance service expenses, showing separately:

   i. incurred claims and other incurred insurance service expenses;

   ii. amortisation of insurance acquisition cash flows;

   iii. changes that relate to past service; and

   iv. changes that relate to future service.

c. c. investment components (including refunds of premiums) excluded from insurance revenue and insurance service expenses.

An example is as follows:

| In €000 | | 2021 Liabilities for remaining coverage: Excluding loss component | Liabilities for remaining coverage: Loss component | Liabilities for incurred claims | Total | IFRS 17.100(a)(c) |
|---|---|---|---|---|---|---|
| Life insurance contract liabilities as at 01/01 | | 9,591 | 285 | 2,017 | 11,893 | IFRS 17.99(b) |
| Life insurance contract assets as at 01/01 | | (138) | 4 | 42 | (92) | IFRS 17.99(b) |
| **Net life insurance contract (assets)/liabilities as at 01/01** | | **9,453** | **289** | **2,059** | **11,801** | |
| Insurance revenue | | (1,773) | - | - | (1,773) | IFRS 17.103(a) |
| Contracts under modified retrospective approach | a | (38) | - | - | (38) | |
| Contracts under fair value approach | b | (4) | - | - | (4) | |
| Other contracts | | (1,731) | - | - | (1,731) | |
| Insurance service expenses | | 15 | (41) | 1,079 | 1,053 | IFRS 17.103(b) |
| Incurred claims and other expenses | | - | (11) | 1,082 | 1,071 | IFRS 17.103(b)(i) |
| Amortisation of insurance acquisition cash flows | c | 15 | - | - | 15 | IFRS 17.103(b)(ii) |
| Losses on onerous contracts and reversals of those losses | | - | (30) | - | (30) | IFRS 17.103(b)(iv) |
| Changes to liabilities for incurred claims | | - | - | (3) | (3) | IFRS 17.103(b)(iii) |
| Investment components | | (50) | - | 50 | - | IFRS 17.103(c) |
| **Insurance service result** | | **(1,808)** | **(41)** | **1,129** | **(720)** | |
| **Insurance finance expenses** | d | **615** | **10** | **77** | **702** | IFRS 17.105(c) |
| **Effect of movements in exchange rates** | | **(55)** | - | - | **(55)** | IFRS 17.105(d) |
| **Total changes in the statement of profit or loss and OCI** | | **(1,248)** | **(31)** | **1,206** | **(73)** | |
| **Cash flows** | | | | | | IFSR 17.105(a) |
| Premiums received | | 1,903 | - | - | 1,903 | IFRS 17.105(a)(i) |
| Claims and other expenses paid | | - | - | (1,250) | (1,250) | IFRS 17.105(a)(ii) |
| Insurance acquisition cash flows | | (19) | - | - | (19) | IFRS 17.105(a)(iii) |
| **Total cash flows** | | **1,884** | - | **(1,250)** | **634** | |
| **Other movements** | e | - | - | - | - | IFRS 17.105(d) |
| **Net life insurance contract (assets)/liabilities as at 31/12** | | **10,089** | **258** | **2,015** | **12,362** | |
| Life insurance contract liabilities as at 31/12 | | 10,253 | 254 | 1,957 | 12,464 | IFRS 17.99(b) |
| Life insurance contract assets as at 31/12 | | (164) | 4 | 58 | (102) | IFRS 17.99(b) |
| **Net life insurance contract (assets)/liabilities as at 31/12** | | **10,089** | **258** | **2,015** | **12,362** | |

Source: EY's Illustrative Financial Statements

## 17.6 When the PAA has not been applied, how are the additional reconciliations of the change in insurance contract liabilities presented?

For insurance contracts other than those to which the PAA has been applied, an entity should split the reconciliation of opening to closing balances by:

a. the estimates of the present value of future cash flows

b. risk adjustment for non-financial risk

c. CSM

Reconciliations should include the following line items:

a. changes that relate to future service showing separately:

   i. changes in estimates that adjust the CSM;

ii. changes in estimates that do not adjust the CSM, i.e., losses on groups of onerous contracts and reversals of such losses; and

iii. the effects of contracts initially recognised in the period.

b. changes that relate to current service; and

c. changes that relate to past service.

An example is as follows:

| In £000 | | 2021 Estimates of the present value of future cash flows | Risk adjustment | Contractual service margin | Total | IFRS 17.101(a)(c) |
|---|---|---|---|---|---|---|
| Life insurance contract liabilities as at 01/01 | | 11,281 | 192 | 420 | 11,893 | IFRS 17.99(b) |
| Life insurance contract assets as at 01/01 | | (98) | 2 | 4 | (92) | IFRS 17.99(b) |
| **Net life insurance contract (assets)/liabilities as at 01/01** | | **11,183** | **194** | **424** | **11,801** | |
| Changes that relate to current services | | | | | | IFRS 17.104(b) |
| Contractual service margin recognised for services provided | | - | - | (280) | (280) | IFRS 17.104(b)(i) |
| Risk adjustment recognised for the risk expired | | - | (51) | - | (51) | IFRS 17.104(b)(ii) |
| Experience adjustments | | (356) | - | - | (356) | IFRS 17.104(b)(iii) |
| Changes that relate to future services | | | | | | IFRS 17.104(a) |
| Contracts initially recognised in the period | a | (331) | 63 | 271 | 3 | IFRS 17.104(a)(i) |
| Changes in estimates that adjust the contractual service margin | | (317) | (1) | 318 | - | IFRS 17.104(a)(ii) |
| Changes in estimates that do not adjust the contractual service margin | | (32) | (1) | - | (33) | IFRS 17.104(a)(iii) |
| Changes that relate to past services | | | | | | IFRS 17.104(c) |
| Adjustments to liabilities for incurred claims | | - | (3) | - | (3) | |
| **Insurance service result** | | **(1,036)** | **7** | **309** | **(720)** | |
| **Insurance finance expenses** | b | **687** | **-** | **15** | **702** | IFRS 17.105(c) |
| **Effect of movements in exchange rates** | | **(51)** | **(1)** | **(3)** | **(55)** | IFRS 17.105(d) |
| **Total changes in the statement of profit or loss and OCI** | | **(400)** | **6** | **321** | **(73)** | |
| **Cash flows** | | | | | | IFRS 17.105(a) |
| Premiums received | | 1,903 | - | - | 1,903 | IFRS 17.105(a)(i) |
| Claims and other expenses paid | | (1,250) | - | - | (1,250) | IFRS 17.105(a)(ii) |
| Insurance acquisition cash flows | | (19) | - | - | (19) | IFRS 17.105(a)(iii) |
| **Total cash flows** | | **634** | **-** | **-** | **634** | |
| **Other movements** | | - | - | - | - | IFRS 17.105(d) |
| **Net life insurance contract (assets)/liabilities as at 31/12** | | **11,417** | **200** | **745** | **12,362** | |
| Life insurance contract liabilities as at 31/12 | | 11,520 | 199 | 745 | 12,464 | IFRS 17.99(b) |
| Life insurance contract assets as at 31/12 | | (103) | 1 | - | (102) | IFRS 17.99(b) |
| **Net life insurance contract (assets)/liabilities as at 31/12** | | **11,417** | **200** | **745** | **12,362** | |

Source: EY's Illustrative Financial Statements

## 17.7 What else should be shown to complete these reconciliations of the change in insurance contract liabilities?

The reconciliations should also disclose:

a. cash flows in the period, including premiums received, incurred claims and other insurance service expenses paid and insurance acquisition cash flows;

b. the effect of changes in the risk of non-performance by the issuer of reinsurance contracts held;

c. insurance finance income or expenses; and

d. any additional line items that may be necessary to understand the change in the net carrying amount of the insurance contracts.

**17.8 If the entity uses the PAA, what does it need to disclose?**

It must disclose in the financial statements:

a. which of the criteria in premium allocation approach it has satisfied;

b. whether it makes an adjustment for the time value of money and the effect of financial risk

c. the method it has chosen to recognise insurance acquisition cash flows.

Some of the requirements to disclose reconciliations (paragraphs 98-105) are amended or not applied when using the PAA.

An example is as follows:

| | |
|---|---|
| IFRS 17.97(a), [IFRS 17.53, 69] | ***vi. Measurement – Contracts measured under the PAA***<br>In the non-life segment, the Group generally uses the PAA to simplify the measurement of groups of contracts on the following bases:<br>– *insurance contracts:* the coverage period of each contract in the group of contracts is one year or less; and<br>– *reinsurance contracts:* the Group reasonably expects that the resulting measurement would not differ materially from the result of applying the accounting policies in (v).<br>However, certain groups of insurance contracts are acquired in their claims settlement period. The claims from some of these groups are expected to develop over more than one year. The Group measures these groups under the accounting policies in (v). |
| IFRS 17.97(c), [IFRS 17.55(a), 59(a)] | On initial recognition of each group of contracts, the carrying amount of the liability for remaining coverage is measured at the premiums received on initial recognition. Insurance acquisition cash flows are recognised as expenses when they are incurred.[a] |
| IFRS 17.97(b), [IFRS 17.55(b)–56] | Subsequently, the carrying amount of the liability for remaining coverage is increased by any premiums received and decreased by the amount recognised as insurance revenue for coverage provided (see (viii)). On initial recognition of each group of contracts, the Group expects that the time between providing each part of the coverage and the related premium due date is no more than a year. Accordingly, the Group has chosen not to adjust the liability for remaining coverage to reflect the time value of money and the effect of financial risk. |
| IFRS 17.97(b), [IFRS 17.57–58] | If at any time during the coverage period, facts and circumstances indicate that a group of contracts is onerous, then the Group recognises a loss in profit or loss and increases the liability for remaining coverage to the extent that the current estimates of the fulfilment cash flows that relate to remaining coverage (including the risk adjustment for non-financial risk) exceed the carrying amount of the liability for remaining coverage. The fulfilment cash flows are adjusted for the time value of money and the effect of financial risk (using current estimates) if the liability for incurred claims is also adjusted for the time value of money and the effect of financial risk (see below). |
| IFRS 17.97(b), [IFRS 17.59(b), B72(a)] | The Group recognises the liability for incurred claims of a group of insurance contracts at the amount of the fulfilment cash flows relating to incurred claims. The fulfilment cash flows are discounted (at current rates) unless the cash flows are expected to be paid in one year or less from the date the claims are incurred. |

Source: KPMG's Illustrative Financial Statements

### 17.9 Are there any differences with respect to presentation for Direct Participating Contracts ("DPCs")?

There are no specific presentation requirements for DPCs.

### 17.10 Are there any additional disclosures required for DPCs?

Paragraphs 110-113 set out additional requirements for DPCs.

An entity is required to explain the relationship between IFIE and the investment return on its assets (paragraph 110).

- The composition of the underlying items and their fair value is also disclosed (paragraph 111).
- If risk mitigation is used and the CSM is not adjusted for some changes in the fulfilment cashflows the impact of this on the CSM is disclosed (paragraph112).

- If the basis for disaggregation of IFIE is changed then the period when the change occurred, the reason, any adjustments as a result and the carrying amount of the contracts to which the change applied are disclosed (paragraph 113).

### 17.11 Are reconciliations for reinsurance contracts held shown separately?

Yes, paragraph 98 specifies that separate reconciliations shall be disclosed for insurance contracts issued and reinsurance contracts held and that the reconciliations should be adapted to reflect the features of reinsurance contracts held that differ from insurance contracts issued.

### 17.12 Are any disclosures required specifically for insurance issued and reinsurance contracts issued and held in the current period?

Yes, for insurance contracts other than those where the PAA has been applied, their effect on insurance contract liabilities at initial recognition must be shown:

a. the estimates of the present value of future cash outflows, showing separately the amount of the insurance acquisition cash flows;

b. the estimates of the present value of future cash inflows;

c. the risk adjustment for non-financial risk; and

d. the CSM.

One must also separately disclose amounts resulting from:

a. contracts acquired from other entities in transfers of insurance contracts or business combinations; and

b. groups of contracts that are onerous,

as well as separately for insurance contracts issued and reinsurance contracts held.

An example is as follows:

| | | 20X4 | | | 20X3 | | |
|---|---|---|---|---|---|---|---|
| IFRS 17(108) | **Life Risk - Insurance contracts issued** | **Non-onerous contracts originated** | **Onerous contracts originated** | **Total** | **Non-onerous contracts originated** | **Onerous contracts originated** | **Total** |
| IFRS 17(107)(a) | Estimates of the present value of future cash outflows | | | | | | |
| IFRS 17(107)(a) | - Insurance acquisition cash flows | 5,942 | 281 | 6,223 | 4,753 | 225 | 4,978 |
| IFRS 17(107)(a) | - Claims and other directly attributable expenses | 152,932 | 7,648 | 160,580 | 123,173 | 6,159 | 129,332 |
| | Estimates of the present value of future cash outflows | 158,874 | 7,929 | 166,803 | 127,926 | 6,384 | 134,310 |
| IFRS 17(107)(b) | Estimates of the present value of future cash inflows | (183,465) | (8,703) | (192,168) | (147,502) | (6,997) | (154,499) |
| IFRS 17(107)(c) | Risk adjustment for non-financial risk | 16,180 | 809 | 16,989 | 13,031 | 652 | 13,683 |
| IFRS 17(107)(d) | CSM | 8,411 | - | 8,411 | 6,545 | - | 6,545 |
| | **Increase in insurance contract liabilities from contracts recognised in the period** | **-** | **35** | **35** | **-** | **39** | **39** |

Source: PWC's Illustrative Financial Statements

### 17.13 How is the CSM release pattern disclosed?

Apart from contracts where the PAA has been applied, IFRS 17 requires an entity to disclose when they expect to recognise the CSM remaining at the end of the reporting period in P&L quantitatively, in appropriate time bands.

This information should be provided separately for insurance contracts issued and reinsurance contracts held.

An example is as follows:

**12.3. CSM recognition in profit or loss**

The disclosure of when the CSM is expected to be in income in future years is presented below:

| | 2021 | | | | | | |
|---|---|---|---|---|---|---|---|
| **In €000** | **Less than 1 year** | **1-2 years** | **2-3 years** | **3-4 years** | **4-5 years** | **More than 5 years** | **Total** |
| **Insurance contracts issued** | | | | | | | |
| Life insurance unit | 34 | 39 | 50 | 103 | 95 | 424 | 745 |
| Life reinsurance unit | 34 | 36 | 49 | 58 | 62 | 92 | 331 |
| | **68** | **75** | **99** | **161** | **157** | **516** | **1,076** |
| **Reinsurance contracts held** | | | | | | | |
| Life insurance unit | 23 | 17 | - | 44 | 32 | 45 | 161 |
| | **23** | **17** | **-** | **44** | **32** | **45** | **161** |

| | 2020 | | | | | | |
|---|---|---|---|---|---|---|---|
| **In €000** | **Less than 1 year** | **1-2 years** | **2-3 years** | **3-4 years** | **4-5 years** | **More than 5 years** | **Total** |
| **Insurance contracts issued** | | | | | | | |
| Life insurance unit | 28 | 22 | 34 | 31 | 64 | 245 | 424 |
| Life reinsurance unit | 19 | 16 | 22 | 22 | 26 | 51 | 156 |
| | **47** | **38** | **56** | **53** | **90** | **296** | **580** |
| **Reinsurance contracts held** | | | | | | | |
| Life insurance unit | 3 | 3 | 3 | - | 6 | 9 | 24 |
| | **3** | **3** | **3** | **-** | **6** | **9** | **24** |

Source: EY's Illustrative Financial Statements

### 17.14 To what degree do the underlying items summing up to the IFIE need to be explained?

The disclosure for IFIE must explain the relationship between IFIE and the investment return on its assets, to enable users of its financial statements to evaluate the sources of finance income or expenses recognised in P&L and OCI.

An example is as follows:

| In €000 | 2021 | | | |
|---|---|---|---|---|
| | | Insurance related | Non-insurance related | |
| | Life contracts | Reinsurance contracts issued | | Total |
| **Insurance finance income / (expenses) from insurance contracts issued** | | | | |
| Interest accreted to insurance contracts using current financial assumptions | - | (289) | - | (289) |
| Interest accreted to insurance contracts using locked-in rate | (507) | - | - | (507) |
| Due to changes in interest rates and other financial assumptions | (195) | - | - | (195) |
| Net foreign exchange income / (expense) | 55 | - | - | 55 |
| **Total insurance finance income / (expenses) from insurance contracts issued** | **(647)** | **(289)** | **-** | **(936)** |
| Represented by: | | | | |
| Amounts recognised in profit or loss | (453) | (289) | - | (742) |
| Amounts recognised in OCI | (194) | - | - | (194) |

Source: EY's Illustrative Financial Statements

### 17.15 Are there any changes to the presentation or disclosure requirements when applying IFRS 17 for the first time?

Paragraphs C25 – C28 specify exceptions to the presentation of comparative information when applying IFRS 17 for the first time. These are summarised below.

- Comparative information for periods earlier than the beginning of the annual reporting period immediately preceding the date of initial application may be included but is not required.
- Disclosures specified in paragraphs 93 – 132 are not required for comparative periods before the beginning of the annual reporting period immediately preceding the date of initial application.
- If unadjusted comparative information and disclosures are presented for earlier periods, it must be disclosed that the information has not been adjusted and explain the basis on which it has been prepared.
- Previously unpublished information about claims development that occurred earlier than five years prior to transition to IFRS 17 need not be disclosed. However, if an entity does not disclose that information, it shall disclose that fact.

If an entity redesignates financial assets under IFRS 9 in accordance with paragraph C29 then additional disclosures must be made in accordance with paragraphs C32 and C33.

## Significant judgements in applying IFRS 17

### 17.16 What are the minimum disclosure requirements made in applying IFRS 17?

The minimum disclosure requirements in applying IFRS 17 include specific requirements around inputs, assumptions and estimation techniques. In particular, these include:

a. the methods used to measure insurance contracts and the processes for estimating the inputs to those methods, including quantitative information about those inputs; and

b. any changes in the methods and processes for estimating inputs used to measure contracts, the reason for each change, and the type of contracts affected.

Additionally, there are specific requirements to disclose the approach used, as set out in paragraph 117, to:

i. distinguish changes in estimates of future cash flows arising from the exercise of discretion from other changes in estimates of future cash flows for contracts without direct participation features;

ii. determine the risk adjustment for non-financial risk, including the confidence level or equivalent confidence level (if a different technique is used to determine the risk adjustment);

iii. determine discount rates, including the yield curve/s used to discount cash flows that do not vary based on the returns on underlying items;

iv. determine investment components; and

v. determine the relative weighting of benefits provided by insurance coverage and investment-return service (for insurance contracts without direct participation features) or insurance coverage and investment-related service (for insurance contracts with direct participation features).

**17.17 Are there any disclosure requirements if an entity elects to disaggregate IFIE into amounts presented in P&L, and amounts presented in OCI?**

Yes, the entity shall disclose an explanation of the methods used to determine the IFIE recognised in P&L.

**17.18 If IFIE is disaggregated, what disclosure requirements must the entity observe?**

Paragraph 112 requires that the entity discloses an explanation of the methods used to determine the IFIE recognised in P&L.

An example is as follows:

## Notes to the Financial Statements

***2.2.6.4.3.Insurance finance income and expense***

Insurance finance income or expenses comprise the change in the carrying amount of the group of insurance contracts arising from: *IFRS 17.87*

- The effect of the time value of money and changes in the time value of money
- The effect of financial risk and changes in financial risk

The Company disaggregates insurance finance income or expenses on insurance contracts issued for its immediate annuity and term life portfolios between profit or loss and OCI. The impact of changes in market interest rates on the value of the life insurance and related reinsurance assets and liabilities are reflected in OCI in order to minimise accounting mismatches between the accounting for financial assets and insurance assets and liabilities. The Company's financial assets backing the insurance issued portfolios are predominantly measured at amortised cost or FVOCI. Finance income and expenses on the Company's issued reinsurance contracts is not disaggregated because the related financial assets are managed on a fair value basis and measured at fair value through profit or loss.

*IFRS 17.88(b)*

Source: EY's Illustrative Financial Statements

**17.19 For contracts with direct participation features (VFA contracts), if an entity changes the disaggregation basis of IFIE between P&L and OCI, what disclosure requirements must it observe?**

Paragraph 113 requires that the entity discloses in the period when the change occurred:

a. the reason why the entity was required to change the basis of disaggregation;

b. the amount of any adjustment for each financial statement line item affected; and

c. the carrying amount of the group of insurance contracts to which the change applied at the date of the change.

**17.20 What are the disclosure requirements for describing the components of contracts with direct participation features (VFA contracts)?**

For contracts with direct participation features, the entity shall describe the composition of the underlying items and disclose their fair value (see paragraph 111).

See example below:

Underlying items

The following table sets out the composition and the fair value of underlying items of the Group's participating contracts at the reporting date.[a]

| | | 31 December 2021 | | | 31 December 2020 (restated) | | |
|---|---|---|---|---|---|---|---|
| *In millions of euro* | *Note* | Direct participating contracts | Investment contracts and consolidated funds | Total | Direct participating contracts | Investment contracts and consolidated funds | Total |
| Cash and cash equivalents | *19* | **6,704** | **261** | **6,965** | 6,195 | 545 | 6,740 |
| Financial investments | *20* | **187,306** | **24,517** | **211,823** | 176,324 | 22,264 | 198,588 |
| Receivables | *21* | **16** | **2** | **18** | 25 | 3 | 28 |
| Investment property | *22* | **5,177** | **693** | **5,870** | 5,164 | 665 | 5,829 |
| Owner-occupied property | *24(A)* | **492** | **-** | **492** | 399 | - | 399 |
| Derivative liabilities | *20(A)* | **(718)** | **(28)** | **(746)** | (661) | (27) | (688) |
| | | **198,977** | **25,445** | **224,422** | 187,446 | 23,450 | 210,896 |

Source: KPMG's Illustrative Financial Statements

**17.21 What are the disclosure requirements for contracts with direct participation features (VFA contracts), if an entity chooses not to adjust the CSM for some changes in the fulfilment cash flows? (Paragraph 112)**

Paragraph 112 requires that the entity discloses the effect of that choice on the adjustment to the contract service margin in the current period.

See an example below:

Notes to the consolidated financial statements (continued)

## 10. Net investment result

IFRS 17.110 The following table analyses the Group's net investment result in profit or loss and OCI.

| In millions of euro | Note | 2021 Life risk | 2021 Life savings |
|---|---|---|---|
| **Investment return[a]** | | | |
| Interest revenue on financial assets not measured at FVTPL | (B) | 3,359 | 4,888 |
| Other investment revenue | (C) | 505 | 618 |
| Net impairment loss on financial assets | 5(E) | (130) | (188) |
| Amounts recognised in OCI | (D) | 1,223 | 1,354 |
| **Total investment return** | | 4,957 | 6,672 |
| **Net finance expenses from insurance contracts** | | | |
| Changes in fair value of underlying items of direct participating contracts | | - | - |
| IFRS 17.112 Group's share of changes in fair value of underlying items or fulfilment cash flows that do not adjust the CSM | 29(E)(ii) | - | - |
| Interest accreted | | (2,193) | (3,553) |
| Effect of changes in interest rates and other financial assumptions | | (881) | (828) |
| Effect of measuring changes in estimates at current rates and adjusting the CSM at rates on initial recognition | | 8 | 5 |
| Net foreign exchange loss | | (25) | (35) |
| **Total net finance expenses from insurance contracts** | (A), 29(A) | (3,091) | (4,411) |

Source: KMPG's Illustrative Financial Statements

### 17.22 Are there any disclosure requirements related to the yield curve (or range of yield curves) used to discount cash flows that do not vary based on the returns on underlying items?

Yes, when an entity provides this disclosure in aggregate for a number of groups of insurance contracts, the entity shall provide such disclosures in the form of weighted averages, or relatively narrow ranges.

An example is as follows:

| IFRS 17(120) Product | Currency | 20X4 1 year | 20X4 5 years | 20X4 10 years | 20X4 20 years | 20X4 30 years | 20X3 1 year | 20X3 5 years | 20X3 10 years | 20X3 20 years | 20X3 30 years |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Risk (issued and reinsurance held) | CU | 3.02% | 3.97% | 4.56% | 4.76% | 5.25% | 3.08% | 4.03% | 4.62% | 4.82% | 5.31% |
| Savings | CU | 2.77% | 3.52% | 4.21% | 4.43% | 4.85% | 2.82% | 3.57% | 4.26% | 4.48% | 4.90% |
| Participating | | | | | | | | | | | |
| - Direct participating contracts | CU | 2.42% | 3.37% | 3.96% | - | - | 2.46% | 3.41% | 4.00% | - | - |
| - Investment contracts with DPF | FU | 2.02% | 2.97% | 3.56% | - | - | 2.06% | 3.01% | 3.60% | - | - |
| Property and Casualty (issued and reinsurance held) | CU | 3.02% | 3.97% | 4.56% | - | - | 3.08% | 4.03% | 4.62% | - | - |

Source: PWC's Illustrative Financial Statements

## Nature and extent of risks that arise from contracts within the scope of IFRS 17

### 17.23 What are the minimum disclosure requirements in regard to the nature and extent of risks that arise from contracts within the scope of IFRS 17?

IFRS17 requires entities to disclose information that enables users of its financial statements to evaluate the nature, amount, timing and uncertainty of future cash flows from contracts within the scope of IFRS 17. The risks typically expected to arise are insurance risk and financial risks (including credit risk, liquidity risk and market risk).

If the entity's exposure at the end of the reporting period is not representative of its exposure to risk during the period, further information will need to be disclosed around the true risk exposure during this period and why these differences have occurred.

### 17.24 What information must be disclosed around the risks arising from contracts?

For each type of risk arising from contracts, entities must disclose:

a. the exposures to risks and how they arise;

> The Company offers term life and immediate annuity contracts, as well as life reinsurance contracts.
>
> The main risks that the Company is exposed to are, as follows:
>
> - Mortality risk – risk of loss arising due to the incidence of policyholder death being different than expected
> - Morbidity risk – risk of loss arising due to policyholder health experience being different than expected
> - Longevity risk – risk of loss arising due to the annuitant living longer than expected
> - Expense risk – risk of loss arising from expense experience being different than expected
> - Policyholder decision risk – risk of loss arising due to policyholder experiences (lapses and surrenders) being different than expected

Source: EY's Illustrative Financial Statements

b. the entity's objectives, policies and processes for managing the risks and the methods used to measure the risks. An example is below:

> The objective of the Company is to ensure that sufficient reserves are available to cover the liabilities associated with the insurance and reinsurance contracts that it issues. The risk exposure is mitigated by diversification across the portfolios of insurance contracts. The variability of risks is also improved by careful selection and implementation of underwriting strategy guidelines, as well as the use of outwards reinsurance arrangements.

Source: EY's Illustrative Financial Statements

c. any changes in (a) or (b) from the previous period. An example is below:

> The nature of the Company's exposure to insurance risks and its objectives, policies and processes used to manage and measure the risks have not changed from the previous period.

Source: EY's Illustrative Financial Statements

In addition to the above disclosures required by paragraph 124, paragraph 125 also requires quantitative information on risk exposures to be disclosed.

The nature of the Company's exposure to insurance risks and its objectives, policies and processes used to manage and measure the risks have not changed from the previous period.

The geographical concentration of the Company's life insurance and reinsurance issued (both before and after reinsurance) contracts is shown below. The disclosure is based on the countries where the business is written.

| | 2021 | | | 2020 | | |
|---|---|---|---|---|---|---|
| **In €000** | **Insurance and reinsurance issued** | **Reinsurance held** | **Net** | **Insurance and reinsurance issued** | **Reinsurance held** | **Net** |
| **Direct life insurance contracts issued** | 7,391 | (1,649) | 5,741 | 6,683 | (1,562) | 5,121 |
| Euroland | | | | | | |
| United States | 645 | (174) | 471 | 988 | (247) | 741 |
| **Total term life contracts** | **8,036** | **(1,823)** | **6,212** | **7,671** | **(1,809)** | **5,862** |
| Euroland | 3,980 | (888) | 3,092 | 3,598 | (841) | 2,757 |
| United States | 347 | (94) | 254 | 532 | (133) | 399 |
| **Total immediate annuity contracts** | **4,327** | **(982)** | **3,346** | **4,130** | **(974)** | **3,156** |
| **Total life insurance** | **12,363** | **(2,805)** | **9,558** | **11,801** | **(2,783)** | **9,018** |

Source: EY's Illustrative Financial Statements

### 17.25 What regulatory information must be disclosed under IFRS 17?

Information about the effect of the regulatory frameworks in which the entity operates must be disclosed.

This may include minimum capital requirements or required interest-rate guarantees. If contracts are included in the same group based on the existence of legal or regulatory constraints on prices or levels or benefits (paragraph 20 of IFRS 17), this must also be disclosed.

An example is as follows:

The table below summarises the minimum required capital for the Group and the regulatory capital held. The current year is, in general, an estimate that is updated once calculations prepared for the regulators are final.

| | 20X4 | 20X3 |
|---|---|---|
| Regulatory capital held | 141% | 139% |
| Minimum regulatory capital | 58,100 | 50,500 |

In Oneland, the solvency and capital adequacy margins are calculated based on Oneland Solvency Law, which requires the application of a formula that contains variables for expenses, inflation, investment earnings, death, disability claims, surrenders, policyholder options, distribution of assets among investment classes and the matching of specific classes of assets and liabilities.

The Group is subject to a 20X2 Oneland law requiring insurance groups to calculate a consolidated solvency margin. The Group must establish appropriate internal controls to ensure solvency sufficient to cover all of the Group's insurance liabilities, to inform Oneland's insurance regulatory authorities annually of certain intra-Group transactions and to calculate on a consolidated basis the capital needed to meet the respective solvency requirements of the Group's insurance subsidiaries.

During the period, the Group was compliant with the externally imposed capital requirements.

Source: PWC's Illustrative Financial Statements

### 17.26 What risks should be addressed in the disclosures under IFRS 17?

Under IFRS 17, the following risks should be addressed:

a. concentrations of risk;

b. insurance and market risks;

c. insurance risk - claims development;

d. credit risk; and

e. liquidity risk.

### 17.27 What information about concentration risk must be disclosed?

The following must be disclosed about concentration risk:

i. how the concentrations are determined; and

ii. shared characteristics that identifies each concentration (e.g., the type of insured event, industry, geographical area or currency).

For example, concentrations of financial risk might arise from interest-rate guarantees that come into effect at the same level for a large number of contracts.

Concentrations of financial risk might also arise from concentrations of non-financial risk. For example, if an entity provides product liability protection to pharmaceutical companies and also holds investments in those companies.

### 17.28 What information about sensitivities to changes in risk variables must be disclosed?

Paragraph 128 requires the following disclosures to be made around sensitivities to changes in risk variables:

a. *a sensitivity analysis that shows how profit or loss and equity would have been affected by changes in risk variables that were reasonably possible at the end of the reporting period:*

b. *for insurance risk - showing the effect for insurance contracts issued, before and after risk mitigation by reinsurance contracts held; and*

c. *for each type of market risk - in a way that explains the relationship between the sensitivities to changes in risk variables arising from insurance contracts and those arising from financial assets held by the entity.*

a. *the methods and assumptions used in preparing the sensitivity analysis; and*

b. *changes from the previous period in the methods and assumptions used in preparing the sensitivity analysis, and the reasons for such changes.*

If instead a sensitivity analysis showing how amounts different from those specified above (i.e., P&L and equity) are affected by changes in risk variables, and is used to manage risks arising from contracts within the scope of IFRS 17, it may use that sensitivity analysis in place of the analysis specified above. Paragraph 129 requires that the following be disclosed:

a. *an explanation of the method used in preparing such a sensitivity analysis and of the main parameters and assumptions underlying the information provided; and*

b. *an explanation of the objective of the method used and of any limitations that may result in the information provided.*

### 17.29 What information about claims development must be disclosed?

IFRS 17 requires the disclosure of actual claims compared with previous estimates of the undiscounted amount of the claims (paragraph 130).

The disclosure is required to start at the period when the earliest material claim(s) arose and for which there is still uncertainty about the amount and timing of the claim payments at the end of the reporting period, limited to 10 years prior to the end of the reporting period.

An entity is not required to disclose information about the development of claims for which uncertainty about the amount and timing of the claims payments is typically resolved within one year.

### 17.30 What information about credit risk must be disclosed?

Paragraph 131 requires the following disclosures around credit risk:

a. *the amount that best represents its maximum exposure to credit risk at the end of the reporting period, separately for insurance contracts issued and reinsurance contracts held; and*

b. *information about the credit quality of reinsurance contracts held that are assets*

An example is as follows:

**Credit exposure by credit rating**

The table below provides information regarding the credit risk exposure of the company by classifying assets according to the Company's credit ratings of counterparties.

| | 2021 | | | | |
|---|---|---|---|---|---|
| **In €000** | **High grade** | **Standard grade** | **Past due but not impaired** | **Not rated** | **Total** |
| Cash and cash equivalents | 180 | - | - | - | 180 |
| Debt instruments at FVPL | 5,792 | 298 | - | - | 6,090 |
| Debt instruments at FVOCI | 9,470 | 1,886 | - | - | 11,356 |
| Debt instruments at amortised cost | 1,036 | - | - | - | 1,036 |
| Reinsurance assets | 2,838 | 42 | - | - | 2,880 |
| **Total credit risk exposure** | **19,317** | **2,225** | **-** | **-** | **21,542** |

| | 2020 | | | | |
|---|---|---|---|---|---|
| **In €000** | **High grade** | **Standard grade** | **Past due but not impaired** | **Not rated** | **Total** |
| Cash and cash equivalents | 57 | - | - | - | 57 |
| Debt instruments at FVPL | 4,318 | 232 | - | - | 4,550 |
| Debt instruments at FVOCI | 8,929 | 1,758 | - | - | 10,687 |
| Debt instruments at amortised cost | 987 | - | - | - | 987 |
| Reinsurance assets | 2,776 | 35 | - | - | 2,811 |
| **Total credit risk exposure** | **17,067** | **2,025** | **-** | **-** | **19,092** |

The Company's maximum exposure to credit risk from insurance contract assets held is €102,000 (2020: €92,000)

The Company actively manages its product mix to ensure that there is no significant concentration of credit risk.

Source: EY's Illustrative Financial Statements

### 17.31 What information about liquidity risk must be disclosed?

Under IFRS 17, the following disclosures must be made around liquidity risk.

a. A description of how the entity manages the liquidity risk.

b. Separate maturity analyses for portfolios of insurance contracts issued that are liabilities and portfolios of reinsurance contracts held that are liabilities that show, as a minimum, net cash flows of the portfolios for each of the first five years after the reporting date and in aggregate beyond the first five years. An entity is not required to include in these analyses liabilities for remaining coverage measured under the PAA. The analyses may take the form of:

   i. an analysis, by estimated timing, of the remaining contractual undiscounted net cash flows; or

ii. an analysis, by estimated timing, of the estimates of the present value of the future cash flows.

c. c. The amounts that are payable on demand, explaining the relationship between such amounts and the carrying amount of the related groups of contracts, if not disclosed applying (b) of this paragraph.

An example is as follows:

**Maturity analysis for insurance and reinsurance contract liabilities (present value of future cash flows basis)**

The following table summarises the maturity profile of groups of insurance contract issued and groups of reinsurance contracts held that are liabilities of the Company based on the estimates of the present value of the future cash flows expected to be paid out in the periods presented.

| | 2021 | | | | | | |
|---|---|---|---|---|---|---|---|
| **In €000** | **Up to 1 year** | **1-2 years** | **2-3 years** | **3-4 years** | **4-5 years** | **>5 years** | **Total** |
| Life Insurance contract liabilities | 529 | 607 | 767 | 1,598 | 1,469 | 6,550 | 11,520 |
| Insurance contract liabilities (reinsurance) | 473 | 502 | 685 | 812 | 876 | 1,302 | 4,650 |
| Reinsurance contract liabilities (held) | 4 | 3 | - | 6 | 5 | 7 | 25 |
| **TOTAL** | **1,006** | **1,112** | **1,452** | **2,416** | **2,350** | **7,859** | **16,195** |

Source: EY's Illustrative Financial Statements

## Presentation for different types of entity

### 17.32 How does the presentation differ for mutual entities?

Paragraph 6 of IAS 1 explains that entities that do not have equity, such as some mutual funds, and entities whose share capital is not equity, such as some cooperative entities, may need to adapt the financial statement presentation of members' or policyholders' interests. Prior to implementation of IFRS 17, some entities presented a liability for unallocated divisible surplus to represent the surplus which had not been allocated between participating policyholders prior to reporting the financial statements.

Under IFRS 17 estimates of the expected cash flows to participating policyholders are included in the value of insurance contracts. Unallocated divisible surplus will not be presented as a separate item and the amount is included in the fulfilment cash flows. Accounting mis-matches could give rise to equity in mutual entities (see paragraphs BC266 and BC267).

### 17.33 How does the presentation differ for entities with run off business?

In this chapter, run off business refers to where an entity has ceased to issue new policies for part or all of its business but is continuing to manage previously issued contracts. (This is sometimes also referred to with regard to life / annuity business as "Closed books".) Provided that a business is a going concern, IFRS 17 presentation applies in the same way

to reporting entities where some or all of the business is running off and to entities that continue to write new business.

Where a reporting entity is not considered to be a going concern, IAS 1 requires additional disclosures which may need to be taken into consideration when applying IFRS 17.

**17.34 How does IFRS 17 presentation results differ for consolidated financial statements?**

There are no differences in the requirements for presentation for entity level accounts for an insurer or reinsurer and for a group that has issued insurance contracts within one of its group companies. However, as explained above, IFRS 17 needs to be applied with reference to the requirements of other relevant standards.

IFRS 10 sets out the requirements for producing consolidated financial statements. One of the requirements of IFRS 10 is that intra-group balances are eliminated on consolidation (see paragraph B86(b) of IFRS10). For example, where there are intra-group reinsurance arrangements, the consolidated amounts for insurance contracts and reinsurance contracts are not simply the sum of these amounts in the entity financial statements. Rather the amounts presented exclude the intra-group balances such that the value of reinsurance contracts for the consolidated group are only in relation to contracts entered into with parties outside the group.

## Transition requirements

**17.35 What reconciliations are required at transition?**

Paragraph 114 specifies that an entity shall disclose the reconciliation of the CSM applying paragraph 101(c), and the amount of insurance revenue, applying paragraph 103(a), separately for:

a. insurance contracts that existed at the transition date to which the entity has applied the modified retrospective approach;

b. insurance contracts that existed at the transition date to which the entity has applied the fair value approach; and

c. all other insurance contracts.

This will enable users of financial statements to identify the effect of groups of insurance contracts measured at the transition date applying the modified retrospective approach (see paragraphs C6–C19) or the fair value approach (see paragraphs C20–C24) on the CSM and insurance revenue in subsequent periods.

See example below:

| 20X4 | Life Risk | Savings | Partcipating | | Property and Casualty | Total |
|---|---|---|---|---|---|---|
| | | | Direct participating contracts | Investment contracts with DPF | | |
| ***Insurance contracts issued*** | | | | | | |
| **Insurance revenue** | | | | | | |
| New contracts and contracts measured under the full retrospective approach at transition | 48,543 | 14,178 | 687 | 193 | 3,452 | 67,053 |
| Contracts measured under the modified retrospective approach at transition | 12,896 | 3,452 | 165 | 46 | - | 16,559 |
| Contracts measured under the fair value approach at transition | 11,864 | 2,209 | 105 | 30 | - | 14,208 |
| | **73,303** | **19,839** | **957** | **269** | **3,452** | **97,820** |
| **CSM as at 31 December** | | | | | | |
| New contracts and contracts measured under the full retrospective approach at transition | 29,035 | 14,382 | 2,737 | 558 | 120 | 46,832 |
| Contracts measured under the modified retrospective approach at transition | 7,006 | 3,136 | 614 | 123 | - | 10,879 |
| Contracts measured under the fair value approach at transition | 6,443 | 2,005 | 393 | 79 | - | 8,920 |
| | **42,484** | **19,523** | **3,744** | **760** | **120** | **66,631** |
| ***Reinsurance contracts held*** | | | | | | |
| **CSM as at 31 December** | | | | | | |
| New contracts and contracts measured under the full retrospective approach at transition | (23,524) | - | - | - | - | (23,524) |
| Contracts measured under the modified retrospective approach at transition | (5,701) | - | - | - | - | (5,701) |
| Contracts measured under the fair value approach at transition | (5,243) | - | - | - | - | (5,243) |
| | **(34,468)** | **-** | **-** | **-** | **-** | **(34,468)** |

Source: PWC's Illustrative Financial Statements

### 17.36 Are any disclosures required during transition?

Entities are required to explain how it determined the measurement of insurance contracts at the transition date to enable users of financial statements to understand the nature and significance of the methods used and judgements applied in determining the transition amounts. This must be done for all periods in which disclosures are made applying paragraphs 114(a) or 114(b).

See an example below:

# Notes to the consolidated financial statements (continued)

## 44. Significant accounting policies (continued)

### E. Insurance and reinsurance contracts (continued)

#### *viii. Presentation (continued)*

Insurance finance income and expenses (continued)

Amounts presented in OCI are accumulated in the insurance finance reserve. If the Group derecognises a contract without direct participation features as a result of a transfer to a third party or a contract modification, then any remaining amounts of accumulated OCI for the contract are reclassified to profit or loss as a reclassification adjustment.[a]

The Group presents insurance finance income and expenses for all other contracts in profit or loss.

#### *ix. Contracts measured under the modified retrospective approach*[b]

On transition to IFRS 17, the Group applied the modified retrospective approach in identifying and measuring certain groups of contracts in the life risk, life savings and participating segments at 1 January 2020. The objective of this approach was to achieve the closest outcome to retrospective application possible using reasonable and supportable information available without undue cost or effort. The Group applied each of the following modifications only to the extent that it did not have reasonable and supportable information to apply IFRS 17 retrospectively.

The Group applied IFRS 17 retrospectively for all contracts issued or acquired on or after 1 January 2016.

Assessments at inception or on initial recognition

For groups of deferred fixed annuity and universal life contracts issued before 1 January 2008, the Group determined how to identify discretionary cash flows (see Note 29(E)(i)) using information available at 1 January 2020. These contracts represented 12% of the total number of deferred fixed annuity and universal life contracts at 1 January 2020.

Some groups of immediate fixed annuity contracts issued before 30 September 2006 contain contracts issued more than one year apart. For these groups, the discount rates at 1 January 2020 were used for subsequent measurement instead of the discount rates on initial recognition. These contracts represented 8% of the total number of immediate fixed annuity contracts at 1 January 2020.

Contracts without direct participation features

The Group applied the following modifications to certain groups of contracts.

– For groups of contracts issued or acquired before 1 January 2016, the future cash flows on initial recognition were estimated by adjusting the amount at 1 January 2016 or an earlier date (determined retrospectively) for the cash flows that were known to have occurred before that date. The earliest date on which future cash flows could be determined retrospectively for any group of contracts was 1 January 2012.

Source: KPMG's Illustrative Financial Statements

### 17.37 What disclosures are required if an entity chooses to disaggregate insurance finance income or expenses between P&L and OCI by applying paragraphs C18(b), C19(b), C24(b) and C24(c)?

For all periods in which amounts determined applying these paragraphs exist, the entity shall disclose a reconciliation from the opening to the closing balance of the cumulative amounts included in OCI for financial assets measured at fair value through OCI related to the groups of insurance contracts in accordance with paragraph 116.

The reconciliation shall include, for example:

- gains or losses recognised in OCI in the period; and
- gains or losses previously recognised in OCI in previous periods reclassified in the period to P&L.

See the example below:

**12.4. Reconciliation of amounts included in OCI for financial assets at FVOCI**

On transition to IFRS 17, the Company applied the modified retrospective approach for certain groups of contracts in the immediate annuity portfolio, refer to Note 1.1.1.3.2 for details. *IFRS 17.C18(b)(i)*

The movement in the fair value reserve for financial assets measured at fair value through OCI that are related to the annuity portfolio is disclosed below: *IFRS 17.116*

| In € | 2021 | 2020 |
|---|---|---|
| **Cumulative other comprehensive income, opening balance** | **13,924** | **16,143** |
| Gains or losses recognised in other comprehensive income in the period | 7,580 | (2,294) |
| Amounts recognised in profit or loss during the period | 79 | 75 |
| **Cumulative other comprehensive income, closing balance** | **21,583** | **13,924** |

Source: EY's Illustrative Financial Statements

### 17.38 What IFRS 17 comparative information is required?

There is a requirement when transitioning to a new IFRS to provide financial statements (comparatives) as of the beginning of the period immediately preceding the date of initial application.

The dates that follow apply for entities with quarterly financial reporting and an assumed date of initial application of 1 January 2023. Analogous dates would apply in other situations.

On 31 March 2023 the entity will report the following on the new IFRS 17 basis.

- the 31 December 2022 statement of financial position
- the statement(s) of financial performance for the 3-month period ending 31 March 2023
- the 31 March 2023 statement of financial position will not be presented, but will be necessary to the extent needed to prepare the 31 March 2023 statement(s) of financial performance
- the 31 December 2021 statement of financial position

- the statement(s) of financial performance for the 3-month period ending 31 March 2022
- the 31 March 2022 statement of financial position

**17.39 Can more than one year of IFRS 17 comparative information be presented?**

Yes, an entity is permitted to present more than one year of IFRS 17 comparative information (paragraphs C25-C28). The beginning of the earliest adjusted comparative period presented (which would be the beginning of the period immediately preceding the date of initial application when only one year of comparative information is presented) is called the "transition date". For a 31 December reporter adopting IFRS 17 for the first time from 1 January 2023, the transition date would be 1 January 2022. If an entity chooses to present two years of comparative information (both of which are based on IFRS 17), the transition date would be 1 January 2021. See paragraphs C2 and C25.

**17.40 If provided, how is comparative information for earlier periods presented?**

If the comparative information and disclosures for earlier periods are adjusted by applying IFRS 17, Question 17.39 applies. If the comparative information and disclosures for earlier periods are unadjusted, paragraph C27 requires the entity to "clearly identify the information that has not been adjusted, state that it has been prepared on a different basis, and explain that basis."

**17.41 If the implementation of IFRS 9 is deferred until 1 January 2023, what is the interaction with the IFRS 17 comparative financial statements?**

The insurer has three options:

Option 1: The insurer defers the application of IFRS 9 until the effective date of IFRS 17. Hence, IFRS 9 is applicable for reporting periods starting on or after 1 January 2023 only. For the purpose of the transition calculation in 2022, this insurer would value the assets applying IAS 39 during the comparative period; or

Option 2: The insurer defers the application of IFRS 9 until the effective date of IFRS 17 but chooses to restate the comparatives applying IFRS 9 (as long as an insurer does not need to apply hindsight). Note also that if an insurer sold any assets during 2022, the insurer can't apply IFRS 9 to these assets and would still have to apply IAS 39); or

Option 3: An insurer adopts IFRS 9 on 1 January 2022 and hence the insurer only restates IFRS 17 but not IFRS 9 during the comparative period of IFRS 17.

**17.42 If IFRS 9 is implemented before IFRS 17, are financial assets re-designated when IFRS 17 is implemented?**

The guidance for re-designation and related disclosures is in paragraphs C29-C33. If there are assets designated as fair value through P&L to avoid an accounting mismatch, that designation must be revoked if the accounting mismatch no longer exists under IFRS 17. Otherwise, re-designation of assets is permitted but not required.

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*Educational Note*

# Consideration of Future Income Taxes in the Valuation of Policy Liabilities

**Committee on Property and Casualty Insurance Financial Reporting**

**July 2005**

Document 205048

*Ce document est disponible en français*

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# Memorandum

**To:** All Fellows, Affiliates, Associates and Correspondents of the Canadian Institute of Actuaries practising in Property and Casualty Insurance

**From:** Elaine Lajeunesse, Chairperson
Committee on Property and Casualty Insurance Financial Reporting

**Date:** June 27, 2005

**Subject:** **Educational Note: Consideration of Future Income Taxes in the Valuation of Policy Liabilities**

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Please find enclosed a new educational note entitled, "Consideration of Future Income Taxes in the Valuation of Policy Liabilities", which has been prepared by the Committee on Property and Casualty Insurance Financial Reporting. The purpose of this note is to provide guidance to actuaries in valuing the impact of future income taxes on policy liabilities of Property and Casualty insurers.

Tax specialists from the industry were consulted regarding the basis for determination of the asset for Future Income Taxes for balance sheet purposes.

In accordance with the Institute's policy for Due Process, this educational note has been approved by the Committee on Property and Casualty Insurance Financial Reporting, and has received final approval for distribution by the Practice Standards Council.

Educational notes are covered under Section 1220 of the Standards of Practice. Section 1220 prescribes that "*The actuary should be familiar with relevant educational notes and other designated educational material*." It further explains that a "*practice which the notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation*." As well, "*educational notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them.*"

All questions and comments should be addressed to Claudette Cantin at her *Yearbook* Address.

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## CONSIDERATION OF FUTURE INCOME TAXES IN THE VALUATION OF POLICY LIABILITIES

### Background

Please refer to two sections of the Standards of Practice (SOP) as follows:

**Section 2130.15:** *The insurer's accounting policy may report amounts related to the relevant policies and the assets which support their policy liabilities, such as [… ] future tax liabilities and assets (for example, those in connection with the timing differences between accounting and tax liabilities).*

**Section 2210.02:** *Notwithstanding Section 2100 and this Section 2200, until standards have been developed, the actuary may ignore taxes in determining policy liabilities for property and casualty insurance.*

The Practice Standards Council ("PSC") requested that the Committee on Property and Casualty Insurance Financial Reporting ("the Committee") develop a standard of practice addressing the consideration of future income tax for property and casualty companies, with a view to removing the above-noted exception. As illustrated below, however, income tax is unlikely to be a significant consideration for the valuation of property and casualty companies. Accordingly, the Committee intends to provide guidance to members by way of this educational note, rather than a standard of practice. Following the publication of this educational note, the PSC will remove the above-noted exception.

## ASSET FOR FUTURE INCOME TAXES RELATED TO POLICY LIABILITIES

As detailed in Part XIV of Canadian Income Tax Regulations, the income tax deduction in respect of an insurer's claim liabilities is equal to 95% of the lesser of the *reported reserve* and *claim liability*. As defined in Regulation 1408, *reported reserve* refers to the amount of the net claim liabilities carried by the insurer, and recorded in the insurer's Annual Statement. *Claim liability* refers to the net claim liabilities determined in accordance with accepted actuarial practice (i.e., discounted to reflect the time value of money, and including explicit provisions for adverse deviations). *Reported reserve* and *claim liability* are net of amounts recoverable from reinsurers, and net of amounts recoverable in respect of salvage and subrogation.

By definition, then, the income tax deduction in respect of an insurer's claim liabilities is less than the amount of the claim liabilities recorded in the Annual Statement. This creates a "future tax temporary difference" that gives rise to an asset for Future Income Taxes. This asset for Future Income Taxes represents the prepayment of tax as a result of the liability deducted for tax purposes being less than the amount reported on the balance sheet.

Where the effect of discounting this asset for Future Income Taxes (i.e., the asset for Future Income Taxes related directly to the amount of the policy liabilities) is material, the actuary's estimate of the policy liabilities should be reduced accordingly.

## EFFECT OF DISCOUNTING THE ASSET FOR FUTURE INCOME TAXES

The discussion that follows is limited to the portion of the asset for Future Income Taxes directly related to claim liabilities. A similar approach would be applied in the event that a portion of the asset for Future Income Taxes relates directly to premium liabilities.

It is anticipated that in most cases the effect of discounting the asset for Future Income Taxes would not be material to the valuation of a property and casualty insurer. In order to assess the appropriateness of that assumption, a reasonable approximation of the balance sheet effect can be derived as follows:

| | | |
|---|---|---|
| Estimated Effect of Discounting the Asset for Future Income Taxes | = | [*Reported Reserve*[1] – 95% x (lesser of *Reported Reserve*[1] and *Claim Liability*[1])] |
| | | x Future Income Tax Rate |
| | | x (1 – Present Value Factor[2]) |

Note:

1. As per Canadian Income Tax Regulation 1408:

   *Reported Reserve* = net claims liabilities amount carried in the balance sheet

   *Claim Liability* = net claims liabilities calculated in accordance with accepted actuarial practice.

2. The present value factor referred to above is intended to reflect the time value of money based on the selected rate of return net of the margin for investment return rate. A reasonable approximation of the present value factor can be computed from the estimated claim liabilities, as illustrated in the attached examples.

The first example attached to this educational note is based on a situation where the *Reported Reserve* is equal to the *Claim Liability*. The asset for Future Income Taxes, and the effect of discounting that asset, would be higher if the *Reported Reserve* exceeded the *Claim Liability*, as illustrated in the second example.

The effect on an insurer's income statement of discounting the asset for Future Income Taxes would be computed as the change in the balance sheet effect, as described above.

## OTHER ASSETS FOR FUTURE INCOME TAXES OR LIABILITIES

The asset for Future Income Taxes and liabilities of property and casualty companies may include other components besides those relating directly to the amount of the policy liabilities. To the extent that they do not relate to the policy liabilities, the estimation of such other assets for Future Income Taxes or liabilities would not fall within the scope of the actuary's valuation of the policy liabilities.

**Estimated Effect of Discounting the Asset for Future Income Taxes**
**XYZ Property and Casualty Insurer**
**Example #1 - *Reported Reserve = Claim Liability***

| | | |
|---|---|---|
| (1) Actuary's Estimates | | |
| (a) Undiscounted Estimate | | 1,046,000 |
| (b) Discounted Estimate Excluding PfADs[1] | 987,000 | |
| (c) PfAD – Investment Return Rate | 1,000 | |
| (d) PfAD – Claims Development | 10,000 | |
| (e) PfAD – Reinsurance Recovery | 2,000 | |
| (f) Discounted Including PfADs | | 1,000,000 |
| (2) Income Tax Amounts | | |
| (a) *Reported Reserve* | | 1,000,000 |
| (b) *Claim Liability* | | 1,000,000 |
| (3) Future Income Tax Rate | | 36% |
| (4) Present Value Factor = [(1b)+(1c)]/(1a) | | 0.9446 |

| | |
|---|---|
| Estimated Effect of Discounting the Asset for Future Income Taxes | = [1,000,000 – (95% x 1,000,000)] x 36% x [1.0 - 0.9446] = $997 |
| Estimated Effect As a % of Actuary's Estimate | = [997 / 1,000,000] = 0.10% |

Although the figures used in this example are for illustrative purposes only, the following table may be helpful in assessing the sensitivity of the result to certain key assumptions, namely the discount rate and duration of the liabilities.

| | **Present Value Factor** | | **Estimated Effect of Discounting[3]** | |
|---|---|---|---|---|
| **Discount Rate[2]** | **4-Year Payout[4]** | **10-Year Payout[5]** | **4-Year Payout[4]** | **10-Year Payout[5]** |
| 3% per annum | 0.9712 | 0.9211 | 0.05% | 0.14% |
| 6% per annum | 0.9446 | 0.8538 | 0.10% | 0.26% |
| 10% per annum | 0.9121 | 0.7781 | 0.16% | 0.40% |

Notes:

1. PfAD: Provision for Adverse Deviations.
2. The selected discount rates have been reduced by an investment return rate PfAD.
3. The estimated effect of discounting the asset for Future Income Taxes is expressed as a percentage of the actuary's estimate of the net claim liabilities discounted in accordance with accepted actuarial practice, and including explicit provisions for adverse deviations.
4. The selected 4-year payout (70/15/10/5) results in an average duration of about 1 year.
5. The selected 10-year payout (25/20/15/12.5/10/7/5/2.5/2/1) results in an average duration of about 2.85 years.

**Estimated Effect of Discounting the Asset for Future Income Taxes**
**XYZ Property and Casualty Insurer**
**Example #2 - *Reported Reserve > Claim Liability***

| | | |
|---|---|---|
| (1) Actuary's Estimates | | |
| (a) Undiscounted Estimate | | 1,046,000 |
| (b) Discounted Estimate Excluding PfADs[1] | 987,000 | |
| (c) PfAD – Investment Return Rate | 1,000 | |
| (d) PfAD – Claims Development | 10,000 | |
| (e) PfAD – Reinsurance Recovery | 2,000 | |
| (f) Discounted Including PfADs | | 1,000,000 |
| (2) Income Tax Amounts | | |
| (a) *Reported Reserve* | | 1,078,000 |
| (b) *Claim Liability* | | 1,000,000 |
| (3) Future Income Tax Rate | | 36% |
| (4) Present Value Factor = [(1b)+(1c)]/(1a) | | 0.9446 |

| | |
|---|---|
| Estimated Effect of Discounting the Asset for Future Income Taxes | = [1,078,000 – (95% x 1,000,000)] x 36% x [1.0 - 0.9446] = $2,553 |
| Estimated Effect As a % of Actuary's Estimate | = [2,553 / 1,000,000] = 0.26% |

Although the figures used in this example are for illustrative purposes only, the following table may be helpful in assessing the sensitivity of the result to certain key assumptions, namely the discount rate and duration of the liabilities.

| | **Present Value Factor** | | **Estimated Effect of Discounting[3]** | |
|---|---|---|---|---|
| **Discount Rate[2]** | **4-Year Payout[4]** | **10-Year Payout[5]** | **4-Year Payout[4]** | **10-Year Payout[5]** |
| 3% per annum | 0.9712 | 0.9211 | 0.13% | 0.36% |
| 6% per annum | 0.9446 | 0.8538 | 0.26% | 0.67% |
| 10% per annum | 0.9121 | 0.7781 | 0.41% | 1.02% |

Notes:

1. PfAD: Provision for Adverse Deviations
2. The selected discount rates have been reduced by an investment return rate PfAD.
3. The estimated effect of discounting the asset for Future Income Taxes is expressed as a percentage of the actuary's estimate of the net claim liabilities discounted in accordance with accepted actuarial practice, and including explicit provisions for adverse deviations.
4. The selected 4-year payout (70/15/10/5) results in an average duration of about 1 year.
5. The selected 10-year payout (25/20/15/12.5/10/7/5/2.5/2/1) results in an average duration of about 2.85 years.

*Educational Note*

# Duration Considerations for P&C Insurers

## Committee on Property and Casualty Insurance Financial Reporting

**March 2017**

Document 217027

*Ce document est disponible en français*

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*Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying standards of practice in respect of specific matters. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.*

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# MEMORANDUM

**To:** Members in the property and casualty insurance area

**From:** Pierre Dionne, Chair
Practice Council

Raul Martin, Chair
Committee on Property and Casualty Insurance Financial Reporting

**Date:** March 7, 2017

**Subject:** **Educational Note: Duration Considerations for P&C Insurers**

This educational note has been prepared by the Committee on Property and Casualty Insurance Financial Reporting in accordance with the Institute's Policy on Due Process for the Approval of Guidance Material other than Standards of Practice and Research Documents, and received final approval for distribution from the Practice Council on February 28, 2017.

This guidance was published previously in the 2013-2015 Guidance to the Appointed Actuary for Property & Casualty Insurers, and going forward will be available as a stand-alone educational note.

As outlined in subsection 1220 of the Standards of Practice, "The actuary should be familiar with relevant Educational Notes and other designated educational material". That subsection explains further that a "practice that the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation". As well, "Educational Notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them".

Questions or comments regarding this educational note may be directed to Raul Martin at jscp@jscp.com.

PD, RM

**Introduction and Scope**

The Committee on Property and Casualty Insurance Financial Reporting (PCFRC) of the Canadian Institute of Actuaries (CIA) prepared this educational note to provide guidance to actuaries doing work for property and casualty (P&C) insurers related to duration of the insurer's interest rate sensitive claim liabilities, premium liabilities and assets.

In this document, the term "P&C returns" refers to the uniform returns approved by the Canadian Council of Insurance Regulators. The term "MCT Guideline" refers to the Minimum Capital Test (MCT) Guideline issued by the Office of the Superintendent of Financial Institutions (OSFI) or the version approved for use by provincial regulatory authorities.

Duration has become an increasingly relevant topic for a variety of reasons, including but not limited to the following:

- The MCT Guideline requires the calculation of estimated duration of insurer's interest-rate-sensitive assets, claim liabilities, and premium liabilities for purposes of the interest rate risk margin;
- Duration may be required for the estimation and selection of the margin for investment return rates in applying concepts from the educational note Margins for Adverse Deviations for Property and Casualty Insurance;
- Many insurers are employing the strategy to duration match liabilities to assets to help immunize the impact of relatively small shifts in the market yield curve on surplus; and
- Duration is a consideration in modelling market risk.

Furthermore, there are different interpretations on how duration is to be determined for certain asset classes (e.g., preferred shares).

**Duration Defined**

Duration is a concept or tool that is used to measure both the average maturity of a series of fixed future cash flows, as well as to measure the sensitivity that interest rate changes have on the present value of a series of future cash flows. The calculation of the duration will depend on the duration measure chosen. The three most common types of duration measures are the following:

- *Macaulay duration* is computed as the weighted average of the time to each cash flow payment, using the present value of the future cash flow payment as weights. The Macaulay duration is calculated as follows:

- Macaulay Duration $= \frac{\sum_{t=0}^{n} t \times \text{PVCF}_t}{k \text{ x } \sum_{t=0}^{n} \text{PVCF}_t}$
- Where:

| | | |
|---|---|---|
| *t* | = | time to future cash flow payment |
| yield | = | market value yield to maturity of the cash flows consistent with *k* time period definition |
| *k* | = | number of periods, or payments, per year (e.g., k=2 for semi-annual periods) |
| n | = | number of periods until maturity (i.e., number of years to maturity times *k*) |
| $\text{PVCF}_t$ | = | present value of the cash flow in period *t* discounted at the yield rate or market value of securities |

- **Modified duration** measures the sensitivity of the present value of a series of fixed future cash flows to changes in interest rates. It is calculated as the following:
  - Modified Duration $= \frac{\text{Macaulay Duration}}{1+\text{Yield}}$
- **Effective duration** also measures the sensitivity of the present value of a series of fixed future cash flows and will give a similar estimate as the modified duration approach. In addition, the effective duration measures the fair value sensitivity of assets where interest rate changes would change future cash flows, such as in the case of interest rate derivatives, callable bonds, option embedded assets, etc. For example, bonds with embedded options may be called early, and therefore the yield to maturity would change on the bond and so the modified duration formula would no longer be an appropriate measure to use. The effective duration is calculated as the following:
  - Effective Duration $= \frac{\text{Fair value if yields decline} - \text{fair value if yields rise}}{2 \times \text{initial price} \times \text{change in yield in decimal}}$
  - or Effective Duration $= \frac{V_- - V_+}{2 \times V_0 \times \Delta y}$
  - Where:

| | | |
|---|---|---|
| $\Delta y$ | = | change in yield in decimal |
| $V_0$ | = | initial fair value |
| $V_-$ | = | fair value if yields decline by $\Delta y$ |
| $V_+$ | = | fair value if yields increase by $\Delta y$ |

It is important to note that for the purpose of the MCT, the Macaulay duration is an intermediate step in the calculation of the interest rate sensitivity of an asset or liability and is *not* a measure of duration accepted by regulators. It is also necessary that the duration be

measured on an annual basis for the MCT interest rate margin calculation, as the application of the interest rate shock is measuring the impact of annual interest rate sensitivities. In other words, the definition of the duration needs to be consistent with the definition of the yield rate in terms of period of time, otherwise the results will be incorrect.

Also worth mentioning is that both the modified and effective durations provide only approximations of the sensitivity that changes in interest rates have on the present value of future cash flows. Both of these duration measures provide exact percentage changes for very small changes in interest rate (e.g., one basis point), but are generally less accurate for large changes, as the relationship between the change in interest rate and the change in present value of future cash flows is not linear. More accurate approximations of the impact of changes in interest rates on the present value of future cash flows can be achieved through considering the curvature (or convexity) of the price-yield relationship.

In an attempt to manage the effect that changes in interest rates have on their surplus position, insurers often endeavour to match the duration of their liabilities and assets. This approach is considered good practice. However, it can be demonstrated that there may be future cash flow shortfalls even in situations where the duration of liabilities and assets are perfectly matched. Accordingly, actuaries would consider future net cash flows as well as durations. The value of doing so is demonstrated in the educational note Discounting and Cash Flow Considerations for Property and Casualty Insurers (May 2016).

In the calculation of the interest rate risk margin, an interest rate shock factor is applied to the fair value of interest rate sensitive assets and liabilities and their duration. Actuaries are often involved in the calculation of the duration of liabilities and depending on the size of the insurer, may also be asked for support on the duration of assets.

Instructions on the calculation of the interest rate risk margin are provided in the MCT Guideline. The key points for the calculation of the duration are the following:

- Insurers may use either the modified duration or the effective duration to calculate the duration of assets and liabilities. However, the same duration methodology would apply to all assets and liabilities under consideration. Moreover, the same methodology is to be used consistently from year to year.
- Effective duration is the required measure when interest rate changes may change the expected cash flows.
- The portfolio duration can be obtained by calculating the weighted average of the duration for the assets or liabilities in the portfolio with the weights being proportional to the fair value of the cash flows or securities.

The following sections describe the theory and include some examples behind the calculations of duration of liabilities (both premium and claim) as well as assets.

**Duration of Interest-Rate-Sensitive Liabilities**

When evaluating the duration of the claim and premium liabilities, actuaries would consider the following:

- Assumptions underlying the duration calculation would be consistent with those underlying the discounting calculation (e.g., timing of payout) from the actuary's valuation work.
- The duration may be calculated by line of business using the payout patterns used for discounting. The line of business durations would then be weighted, using actuarial present value (APV) as weights, to derive the total premium or claim liabilities duration. This point is illustrated in appendix A, sheets 2 through 4.
- Alternatively, the duration may be evaluated for all lines of business on a combined basis, with the use of the effective duration approach. This point is illustrated for the duration of premium liabilities in appendix C.
- When the change in interest rate is small, the modified duration and effective duration are approximately the same, and the effective duration can be used to assess the reasonableness of the calculation of the modified duration, or even as a proxy for modified duration if appropriate.
- For premium liabilities, the following additional considerations apply:
  - The calculation would be adjusted for the future accident date; and
  - The future accident date would be adjusted to reflect policy terms of other than 12 months.
- For the purposes of input into the MCT calculation, the duration would be net of reinsurance and net of salvage and subrogation.

Interest-rate-sensitive liabilities include those for which the values are determined on a present value (PV) or actuarial present value basis. In accordance with the MCT Guideline, the interest-rate-sensitive liabilities to be included in the calculation of the interest rate risk margin are those for which their fair value will change with movements in interest rates. The following liabilities are considered sensitive to interest rates and are to be included:

- Net unpaid claims and adjustment expenses; and
- Net premium liabilities.

Other interest-rate-sensitive liabilities may include certain types of structured settlements. As per the OSFI guideline D5 Accounting for Structured Settlements, insurers may be required to recognize Type II structured settlement arrangements as an unpaid claim liability on the balance sheet (versus Type I structured settlements which have a disclosure-only requirement). The challenge to actuaries is that the value of the purchased annuities for Type II settlements will flow through the actuarial data as a single lump sum payment which could cause an understatement of the overall duration if not adjusted for. The additional challenge to actuaries is that embedded in the settlement structure value is the assumption of the prevailing interest rate (which is an input into the modified duration calculation). So, in the absence of the real future cash flows and the interest rate, the actuary may need to make a simplified yet reasonable assumption on the underlying payment pattern in order to reasonably approximate

the underlying future cash flows, and may want to consider using the valuation discount rate to complete the modified duration calculation.

P&C insurers may require supervisory approval in order to be able to consider other liabilities in the calculation of the interest rate risk margin.

Refer to appendix A (sheets 2–3) for an example of the duration calculations for unpaid claim liabilities, and to appendix A (sheet 4) for an example of the duration calculations for premium liabilities. Appendix A (sheet 5) shows how the durations calculated in sheets 3 and 4 may be carried into the calculation of the interest rate risk margin in P&C returns.

Refer to appendix B for an illustration of the cash flow matching model to derive the duration of the claim and premium liabilities.

Appendix C is similar to appendix A (sheet 4) except that it illustrates the duration calculation for premium liabilities on an all-lines-combined basis using the effective duration approach. The interest rate risk margin would be amended to reflect the appropriate fields from appendix C.

**Duration of Interest-Rate-Sensitive Assets**

Actuaries may be asked to calculate the duration of the interest-rate-sensitive assets in the insurer's portfolio, including for purposes of the calculation of the interest rate risk margin that is part of the MCT calculation. For most insurers, the main classes of interest-rate-sensitive assets are bonds and preferred shares. Refer to appendix A (sheet 1) for an illustrative duration calculation for fixed income securities.

Retractable preferred shares, and preferred shares with rate reset options, may lend themselves to the same duration calculation approach as bonds, particularly if a redemption date or rate reset date can be considered as equivalent to the maturity date of a bond.

As an alternative to the duration calculations referred to above, or to supplement the calculations for other classes of interest-rate-sensitive assets, actuaries may use estimates derived by the insurer's investment specialists. Before using the work of the investment specialist, the actuary would review the information for reasonableness, and identify which duration formula was used (i.e., Macaulay duration, modified duration, or effective duration) in order to ensure consistency between asset and liability durations.

**Appendices**

The examples in the appendices are provided to assist actuaries in calculating durations for the purpose of the interest rate risk margin in the P&C returns. They are intended to be illustrative, rather than prescriptive. Also included is an example of the use of those estimates in the calculation of the interest rate risk margin in accordance with the MCT Guideline (see appendix A, sheet 5).

Recognizing the link between concepts addressed in this educational note and those addressed in other recently issued educational notes, the appendices include exhibits taken from those other educational notes, as indicated below:

| Exhibit | Description | Reference |
|---|---|---|
| Appendix A | | |
| Sheet 1 | Duration of bonds | 2015 Year-end memo[1] |
| Sheets 2-3 | Duration of unpaid claim liabilities | 2015 Year-end memo[1] |
| Sheet 4 | Duration of premium liabilities | N/A |
| Sheet 5 | Interest Rate Risk Margin | 2015 P&C return[2] |
| Appendix B | Net cash flow matching model | Discounting ed. note[3] |
| Appendix C | Duration of premium liabilities | Premium liabilities ed. note[4] |

(1) Educational Note: 2015 Guidance to the Appointed Actuary for Property and Casualty Insurers (October 2015). Appendix B (Sheets 2-4)

(2) 2015 P&C Return – Page 30.66 – Capital (Margin) Required for Interest Rate Risk

(3) Revised Educational Note: Discounting and Cash Flow Considerations for Property and Casualty Insurers (May 2016). Appendix B (Sheet 4)

(4) Second Revision – Educational Note: Premium Liabilities (July 2016)

Appendix D, Sheet 1 is a deterministic approach to demonstrate that the duration of the net premium liabilities can be derived from the duration of a future accident year. Appendix D, Sheet 2 summarizes the results of testing performed by the PCFRC to assess the effect of various approximations of the Macaulay duration.

## Duration of Bonds

**Appendix A**
**Sheet 1**

Year-end Information

| Description | Bond #1 | Bond #2 | Bond #3 |
|---|---|---|---|
| Valuation Date | 2015/12/31 | 2015/12/31 | 2015/12/31 |
| Maturity Date | 2016/12/31 | 2017/06/30 | 2018/06/30 |
| Coupon Rate | 2.50% | 6.60% | 4.65% |
| Coupon # (k) | 2 | 2 | 2 |
| Par value | 1,250.0 | 1,875.0 | 1,125.0 |
| Market value | 1,265.0 | 2,010.0 | 1,140.0 |
| Semi-annual Coupon $ | 15.6 | 61.9 | 26.2 |
| Yield (y) on a semi-annual basis | 0.644% | 0.859% | 2.042% |
| *Excel Yield (for comparison)* | *0.644%* | *0.859%* | *2.042%* |

Step 1: Future payment for assets

| | Cash flows | | |
|---|---|---|---|
| Year | Bond #1 | Bond #2 | Bond #3 |
| 2016.0 | (1,265.0) | (2,010.0) | (1,140.0) |
| 2016.5 | 15.6 | 61.9 | 26.2 |
| 2017.0 | 1,265.6 | 61.9 | 26.2 |
| 2017.5 | - | 1,936.9 | 26.2 |
| 2018.0 | - | - | 26.2 |
| 2018.5 | - | - | 1,151.2 |

Step 2: Calculation of duration for assets

**Semi-annual (1 basis point) Δy =** **0.01%**

| | Annual (yrs) (1) | Semi-Annual Periods (2) | Cash Flows (3) | Present Value Factor (4) | Discounted Cash Flows (5) | PV Factor with -Δy (9) | PV Factor with +Δy (10) | Discounted Cash Flows with -Δy (11) | Discounted Cash Flows with +Δy (12) |
|---|---|---|---|---|---|---|---|---|---|
| Bond #1 yield: | 0.64% | | | | | | | | |
| | 0.50 | 1 | 15.6 | 0.9936 | 15.5 | 0.9937 | 0.9935 | 15.5 | 15.5 |
| | 1.00 | 2 | 1,265.6 | 0.9872 | 1,249.5 | 0.9874 | 0.9870 | 1,249.7 | 1,249.2 |
| | 1.50 | 3 | - | 0.9809 | - | 0.9812 | 0.9806 | - | - |
| | 2.00 | 4 | - | 0.9746 | - | 0.9750 | 0.9743 | - | - |
| | 2.50 | 5 | - | 0.9684 | - | 0.9689 | 0.9679 | - | - |
| | Total | | | | 1,265.0 | | | 1,265.2 | 1,264.8 |
| (6) Macaulay duration | 0.99386 | 1.98773 | | | | (13) Effective duration (semi-annual periods) | | | 1.9750 |
| (7) Modified duration | 0.98750 | 1.97500 | | | | (14) Effective duration (annual basis) | | | 0.98750 |
| *(8) Excel Duration (comparison):* | *0.99386* | | | | | | | | |
| Bond #2 yield: | 0.86% | | | | | | | | |
| | 0.50 | 1 | 61.9 | 0.9915 | 61.3 | 0.9916 | 0.9914 | 61.4 | 61.3 |
| | 1.00 | 2 | 61.9 | 0.9830 | 60.8 | 0.9832 | 0.9829 | 60.8 | 60.8 |
| | 1.50 | 3 | 1,936.9 | 0.9747 | 1,887.8 | 0.9750 | 0.9744 | 1,888.4 | 1,887.3 |
| | 2.00 | 4 | - | 0.9664 | - | 0.9668 | 0.9660 | - | - |
| | 2.50 | 5 | - | 0.9582 | - | 0.9586 | 0.9577 | - | - |
| | Total | | | | 2,010.0 | | | 2,010.6 | 2,009.4 |
| (6) Macaulay duration | 1.45435 | 2.9087 | | | | (13) Effective duration (semi-annual periods) | | | 2.8839 |
| (7) Modified duration | 1.44197 | 2.8839 | | | | (14) Effective duration (annual basis) | | | 1.44197 |
| *(8) Excel Duration (comparison):* | *1.45435* | | | | | | | | |
| Bond #3 yield: | 2.04% | | | | | | | | |
| | 0.50 | 1 | 26.2 | 0.9800 | 25.6 | 0.9801 | 0.9799 | 25.6 | 25.6 |
| | 1.00 | 2 | 26.2 | 0.9604 | 25.1 | 0.9606 | 0.9602 | 25.1 | 25.1 |
| | 1.50 | 3 | 26.2 | 0.9412 | 24.6 | 0.9414 | 0.9409 | 24.6 | 24.6 |
| | 2.00 | 4 | 26.2 | 0.9223 | 24.1 | 0.9227 | 0.9220 | 24.1 | 24.1 |
| | 2.50 | 5 | 1,151.2 | 0.9039 | 1,040.5 | 0.9043 | 0.9034 | 1,041.0 | 1,040.0 |
| | Total | | | | 1,140.0 | | | 1,140.5 | 1,139.5 |
| (6) Macaulay duration | 2.38980 | 4.7796 | | | | (13) Effective duration (semi-annual periods) | | | 4.68397 |
| (7) Modified duration | 2.34198 | 4.6840 | | | | (14) Effective duration (annual basis) | | | 2.34198 |
| *(8) Excel Duration (comparison):* | *2.38980* | | | | | | | | |

Step 3: Market Value Weighted Duration of Assets

| | Market Value | Modified Duration | Effective Duration |
|---|---|---|---|
| Bond #1 | 1,265.0 | 0.98750 | 0.98750 |
| Bond #2 | 2,010.0 | 1.44197 | 1.44197 |
| Bond #3 | 1,140.0 | 2.34198 | 2.34198 |
| Total | **4,415.0** | **1.54415** | **1.54415** |

(4) = 1 / (1 + y) ^ (2)
(5) = (3) x (4)
(6) Sumproduct of columns (2) and (5) divided by (5) Total; for annual basis divide by 2
(7) = (6) / (1 + y); for annual basis divide by 2
(8) DURATION (Valuation Date, Maturity Date, Coupon Rate, Annual Yield Rate, Coupon Frequency, basis)
(9) = 1 / (1 + y - Δy) ^ (2)
(10) = 1 / (1 + y + Δy) ^ (2)
(11) = (3) x (8)
(12) = (3) x (9)
(13) = [(11) total - (12) total] / [ 2 x Δy ] / [(5) total]
(14) = (13) / 2

## Duration of Unpaid Claim Liabilities

**Appendix A**
**Sheet 2**

Year-end Information

Unpaid as at December 31, 2015

| Accident Year | Property | Liability |
|---|---|---|
| 2011 | - | 32 |
| 2012 | - | 86 |
| 2013 | - | 127 |
| 2014 | 16 | 186 |
| 2015 | 137 | 258 |

Accident Year Payment Pattern

| Age | Property | Liability |
|---|---|---|
| 12 | 80% | 35% |
| 24 | 95% | 68% |
| 36 | 100% | 80% |
| 48 | 100% | 85% |
| 60 | 100% | 90% |
| 72 | 100% | 95% |
| 84 | 100% | 99% |
| 96 | 100% | 100% |

**Yield (y)=** **1.75%**
**Annual Δy =** **0.10%**

Unearned Premium Reserve for Property: 550
Unearned Premium Reserve for Liability: 380
Maintenance Expense Ratio (% UPR) = 3.50%
Maintenance Expenses should be paid during the time the UPR is being earned

Expected Loss Ratio for Property = 65.0%
Expected Loss Ratio for Liability = 80.0%

Step 1: Future payment for claims liabilities

**Property**

| | | Paid in | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Accident Year | Unpaid | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
| 2011 | - | | | | | | | |
| 2012 | - | | | | | | | |
| 2013 | - | | | | | | | |
| 2014 | 16.0 | 16.0 | - | - | - | - | - | |
| 2015 | 137.0 | 102.8 | 34.3 | - | - | - | - | - |
| Total | 153.0 | 118.8 | 34.3 | - | - | - | - | - |

payout for AY 2015 @ 2016 = 137 / (1-80%) * (95% - 80%)
payout for AY 2015 @ 2017 = 137 / (1-80%) * (100% - 95%)
payout for AY 2014 @ 2016 = 16 / (1-95%) * (100% - 95%)

**Liability**

| | | Paid in | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Accident Year | Unpaid | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
| 2011 | 32.0 | 16.0 | 12.8 | 3.2 | | | | |
| 2012 | 86.0 | 28.7 | 28.7 | 22.9 | 5.7 | | | |
| 2013 | 127.0 | 31.8 | 31.8 | 31.8 | 25.4 | 6.4 | | |
| 2014 | 186.0 | 69.8 | 29.1 | 29.1 | 29.1 | 23.3 | 5.8 | |
| 2015 | 258.0 | 131.0 | 47.6 | 19.8 | 19.8 | 19.8 | 15.9 | 4.0 |
| Total | 689.0 | 277.2 | 149.9 | 106.8 | 80.0 | 49.4 | 21.7 | 4.0 |

payout for AY 2015 @ 2016 = 258 / (1-35%) * (68% - 35%)
payout for AY 2015 @ 2017 = 258 / (1-35%) * (80% - 68%)
payout for AY 2014 @ 2016 = 186 / (1-68%) * (80% - 68%)
etc.

## Duration of Unpaid Claim Liabilities

**Appendix A**
**Sheet 3**

Step 2: Calculation of duration for claims liabilities

| Year (1) | Lag (yrs) (2) | Payment (3) | Present Value Factor (4) | Discounted Payment (5) | PV Factor with -Δy (8) | PV Factor with +Δy (9) | Discounted Cash Flows with -Δy (10) | Discounted Cash Flows with +Δy (11) |
|---|---|---|---|---|---|---|---|---|
| **Property** | | | | | | | | |
| 2016 | 0.5000 | 118.8 | 0.9914 | 117.7 | 0.9919 | 0.9909 | 117.8 | 117.7 |
| 2017 | 1.5000 | 34.3 | 0.9743 | 33.4 | 0.9758 | 0.9729 | 33.4 | 33.3 |
| 2018 | 2.5000 | - | 0.9576 | - | 0.9599 | 0.9552 | - | - |
| 2019 | 3.5000 | - | 0.9411 | - | 0.9443 | 0.9379 | - | - |
| 2020 | 4.5000 | - | 0.9249 | - | 0.9290 | 0.9208 | - | - |
| 2021 | 5.5000 | - | 0.9090 | - | 0.9139 | 0.9041 | - | - |
| 2022 | 6.5000 | - | 0.8934 | - | 0.8991 | 0.8877 | - | - |
| Total | | | | 151.1 | | | 151.2 | 151.0 |
| | 0.7209 | (6) Macaulay duration | | | | | (12) Effective duration | 0.7085 |
| | 0.7085 | (7) Modified duration | | | | | | |
| **Liability** | | | | | | | | |
| 2016 | 0.5000 | 277.2 | 0.9914 | 274.8 | 0.9919 | 0.9909 | 274.9 | 274.6 |
| 2017 | 1.5000 | 149.9 | 0.9743 | 146.1 | 0.9758 | 0.9729 | 146.3 | 145.8 |
| 2018 | 2.5000 | 106.8 | 0.9576 | 102.3 | 0.9599 | 0.9552 | 102.5 | 102.0 |
| 2019 | 3.5000 | 80.0 | 0.9411 | 75.3 | 0.9443 | 0.9379 | 75.6 | 75.1 |
| 2020 | 4.5000 | 49.4 | 0.9249 | 45.7 | 0.9290 | 0.9208 | 45.9 | 45.5 |
| 2021 | 5.5000 | 21.7 | 0.9090 | 19.7 | 0.9139 | 0.9041 | 19.8 | 19.6 |
| 2022 | 6.5000 | 4.0 | 0.8934 | 3.5 | 0.8991 | 0.8877 | 3.6 | 3.5 |
| Total | | | | 667.4 | | | 668.6 | 666.2 |
| | 1.8176 | (6) Macaulay duration | | | | | (12) Effective duration | 1.7863 |
| | 1.7863 | (7) Modified duration | | | | | | |

Step 3: Weighted duration for claims liabilities

| | PV of Unpaid Claims | PFAD | APV of Unpaid Claims | Modified Duration | Effective Duration |
|---|---|---|---|---|---|
| Property | 151.1 | 5 | 156 | 0.7085 | 0.7085 |
| Liability | 667.4 | 115 | 782 | 1.7863 | 1.7863 |
| Total | 818.5 | 120 | **938** | **1.6070** | **1.6070** |

(3) From Appendix A, Sheet 2
(4) = 1 / (1 + y) ^ (2)
(5) = (3) x (4)
(6) Sumproduct of columns (2) and (5) divided by (5) Total
(7) = (6) / (1 + y)

(8) = 1 / (1 + y - Δy) ^ (2)
(9) = 1 / (1 + y + Δy) ^ (2)
(10) = (3) x (8)
(11) = (3) x (9)
(12) = [(10) total - (11) total] / [2 x Δy ] / [(5) total]

## Duration of Premium Liabilities

**Appendix A**
**Sheet 4**

Yield (y) = 1.75%
Annual Δy = 0.10%

| Year (1) | Lag to Time Zero (yrs) (2) | AY Incremental Payment Pattern (3) | Present Value Factor (4) | Discounted to Time Zero (5) | PV Factor with -Δy (13) | PV Factor with +Δy (14) | Discounted with -Δy (15) | Discounted with +Δy (16) |
|---|---|---|---|---|---|---|---|---|
| **Property** | | | | | | | | |
| 2016 | 0.5000 | 80.0% | 0.9914 | 79.31% | 0.9919 | 0.9909 | 79.35% | 79.27% |
| 2017 | 1.5000 | 15.0% | 0.9743 | 14.61% | 0.9758 | 0.9729 | 14.64% | 14.59% |
| 2018 | 2.5000 | 5.0% | 0.9576 | 4.79% | 0.9599 | 0.9552 | 4.80% | 4.78% |
| 2019 | 3.5000 | 0.0% | 0.9411 | 0.00% | 0.9443 | 0.9379 | 0.00% | 0.00% |
| 2020 | 4.5000 | 0.0% | 0.9249 | 0.00% | 0.9290 | 0.9208 | 0.00% | 0.00% |
| 2021 | 5.5000 | 0.0% | 0.9090 | 0.00% | 0.9139 | 0.9041 | 0.00% | 0.00% |
| 2022 | 6.5000 | 0.0% | 0.8934 | 0.00% | 0.8991 | 0.8877 | 0.00% | 0.00% |
| 2023 | 7.5000 | 0.0% | 0.8780 | 0.00% | 0.8845 | 0.8715 | 0.00% | 0.00% |
| Total | | | | 98.71% | | | 98.78% | 98.64% |

| | | | | |
|---|---|---|---|---|
| 0.7451 | (6) Macaulay Duration | | | |
| 0.7322 | (7) Modified Duration | | | |
| 0.5000 | (8) Mean Accident Date of an AY | | 0.5000 | 0.5000 |
| 0.3333 | (9) Mean Accident Date of UPR | | 0.3333 | 0.3333 |
| 0.9900 | (10) Discount Factor at Time Zero of Prem Liab | | 0.9905 | 0.9894 |
| 0.5784 | (11) Macaulay Duration | | (17) Effective Duration: | 0.5684 |
| 0.5684 | (12) Modified Duration | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Liability** | | | | | | | | |
| 2016 | 0.5000 | 35.0% | 0.9914 | 34.7% | 0.9919 | 0.9909 | 34.71% | 34.68% |
| 2017 | 1.5000 | 33.0% | 0.9743 | 32.2% | 0.9758 | 0.9729 | 32.20% | 32.10% |
| 2018 | 2.5000 | 12.0% | 0.9576 | 11.5% | 0.9599 | 0.9552 | 11.52% | 11.46% |
| 2019 | 3.5000 | 5.0% | 0.9411 | 4.7% | 0.9443 | 0.9379 | 4.72% | 4.69% |
| 2020 | 4.5000 | 5.0% | 0.9249 | 4.6% | 0.9290 | 0.9208 | 4.65% | 4.60% |
| 2021 | 5.5000 | 5.0% | 0.9090 | 4.5% | 0.9139 | 0.9041 | 4.57% | 4.52% |
| 2022 | 6.5000 | 4.0% | 0.8934 | 3.6% | 0.8991 | 0.8877 | 3.60% | 3.55% |
| 2023 | 7.5000 | 1.0% | 0.8780 | 0.9% | 0.8845 | 0.8715 | 0.88% | 0.87% |
| Total | | | | 96.67% | | | 96.85% | 96.48% |

| | | | | |
|---|---|---|---|---|
| 1.9282 | (6) Macaulay Duration | | | |
| 1.8950 | (7) Modified Duration | | | |
| 0.5000 | (8) Mean Accident Date of an AY | | 0.5000 | 0.5000 |
| 0.3333 | (9) Mean Accident Date of UPR | | 0.3333 | 0.3333 |
| 0.9695 | (10) Discount Factor at Time Zero of Prem Liab | | 0.9712 | 0.9678 |
| 1.7615 | (11) Macaulay Duration | | (17) Effective Duration: | 1.7312 |
| 1.7312 | (12) Modified Duration | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Maintenance Expenses** | | | | | | | | |
| 2016 | 0.5000 | 100% | 0.9914 | 99.1% | 0.9919 | 0.9909 | 99.19% | 99.09% |
| 2017 | 1.5000 | 0% | 0.9743 | 0.0% | 0.9758 | 0.9729 | 0.00% | 0.00% |
| Total | | | | 99.1% | | | 99.19% | 99.09% |

| | | | | |
|---|---|---|---|---|
| 0.5000 | (6) Macaulay Duration | | | |
| 0.4914 | (7) Modified Duration | | | |
| 0.5000 | (8) Mean Accident Date of an AY | | 0.5000 | 0.5000 |
| 0.3333 | (9) Mean Accident Date of UPR | | 0.3333 | 0.3333 |
| 0.9942 | (10) Discount Factor at Time Zero of Prem Liab | | 0.9946 | 0.9939 |
| 0.3333 | (11) Macaulay Duration | | (17) Effective Duration: | 0.3276 |
| 0.3276 | (12) Modified Duration | | | |

| | UPR | ELR | Undiscounted Prem Liabilities | Discount Factor | PV of Prem Liabilities | Total PFAD | APV of Prem Liabilities | Modified Duration | Effective Duration |
|---|---|---|---|---|---|---|---|---|---|
| Property | 550 | 65.0% | 357.5 | 0.9900 | 353.9 | 12 | 365.9 | 0.5684 | 0.5684 |
| Liability | 380 | 80.0% | 304.0 | 0.9695 | 294.7 | 51 | 345.7 | 1.7312 | 1.7312 |
| Maintenance | | 3.50% | 32.6 | 0.9942 | 32.4 | - | 32.4 | 0.3276 | 0.3276 |
| Total | 930 | | 694.1 | | 681.0 | 63 | **744.0** | **1.0983** | **1.0983** |

(2) Assume that all policies have 12-month terms with equal earning
(3) From Appendix A, Sheet 2
(4) [ 1 + y ]^-(2)
(5) = (3) x (4)
(6) = Sumproduct of columns (2) and (5) divided by (5) total
(7) = (6) / [ 1 + y ]
(8) Average accident date of a future accident year (July 1st)
(9) Mean average accident date of premium liabilities (May 1st).

(10) = (5) total x ( 1 + y )^ [ (8) - (9) ]
(11) = (6) - (8) + (9)
(12) = (11) / [ 1 + y ]
(13) = [ 1 + y - Δy ]^-(2)
(14) = [ 1 + y + Δy ]^-(2)
(15) = (3) x (13)
(16) = (3) x (14)
(17) [Discount Factor with +Δy - Discount Factor with -Δy ] / [2 x Δy ] / (10)

**30.66**

**2015**

Date

**MCT (BAAT) MARKET RISK CAPITAL (MARGIN) REQUIREMENTS**
**($'000)**

**Interest rate shock factor**
0.01250 (0.01250)

| **Capital (Margin) Required for Interest Rate Risk** | | | | | |
|---|---|---|---|---|---|
| (55) | | **Fair value** (01) | **Modified or effective duration** (02) | **Dollar fair value change (01)x(02)xΔy** (03) | **Dollar fair value change (01)x(02)x(-Δy)** (04) |
| **Interest rate sensitive assets:** | | | | | |
| Term deposits | 01 | | | 0 | 0 |
| Bonds and debentures | 02 | 4,415.0 | 1.5441 | 85 | -85 |
| Commercial paper | 03 | | | 0 | 0 |
| Loans | 04 | | | 0 | 0 |
| Mortgages | 05 | | | 0 | 0 |
| MBS and ABS | 06 | | | 0 | 0 |
| Preferred shares | 07 | | | 0 | 0 |
| Other (specify) | 08 | | | 0 | 0 |
| **Total interest rate sensitive assets** | **09** | 4,415.0 | | 85 | -85 |
| **Interest rate sensitive liabilities:** | | | | | |
| Net unpaid claims and adjustment expenses | 10 | 938.5 | 1.6070 | 19 | -19 |
| Net premium liabilities | 11 | 744.0 | 1.0983 | 10 | -10 |
| Other as approved by OSFI | 12 | | | 0 | 0 |
| **Total interest rate sensitive liabilities** | **19** | 1,682.5 | | 29 | -29 |
| **Allowable interest rate derivatives:** | | **Notional value** (05) | | **Dollar fair value Δy** (06) | **Dollar fair value - Δy** (07) |
| Long positions | 20 | | | | |
| Short positions | 21 | | | | |
| **Total allowable interest rate derivatives** | **29** | | | 0 | 0 |
| Capital required for Δy shock increase | 30 | | | 56 | |
| Capital required for Δy shock decrease | 31 | | | | 0 |
| **Total interest rate risk margin** | **39** | | | | 56 |

Note: Δy = 1.25%

Row 02 from Appendix A, Sheet 1
Row 10 from Appendix A, Sheet 3
Row 11 from Appendix A, Sheet 4

**Appendix B**

**ABC INSURANCE COMPANY**

**31 DECEMBER 2015**

**CASH FLOW MATCHING MODEL**

**Cash Flow (in $000's) for Determination of Discount Rate**

| | | |
|---|---|---|
| Reinvestment Rate | | 1.000% |
| Internal Rate of Return (IRR) on Cash Flows: | IRR per Col (4) | 2.153% |
| Estimated investment expense ratio | | 0.250% |
| Indicated discount rate net of expenses | | 1.903% |

| | Cash In-flow from Assets | | | | | Cash Outflow | | | Net Inflow (Excess) | | | | Reinvested Funds | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) Year | (2) Cash from Investment Sheet 3 | (3) (To)/ From Reinvestment See below | (4) Total Inflow = (2) + (3) | (4a) Payment of Net Claim Liabilities | (4b) Payment of Net Prem Liabilities | (5) Payment of Net Policy Liabilities Sheet 3 | (6) Cash Withdrawal = (4) - (5) | (7) Total Outflow = (5) + (6) | (8) Net inflow No Reinv/WD = (2) - (5) | (9) Cumulative Excess Based on (8) | (10) Net inflow With Reinv/WD = (4) - (7) | (11) Cumulative Excess Based on (10) | (12) Opening Balance = (15) prior year | (13) Interest Earned on Reinv. =(12) * Reinv. Rate | (14) Deposit / (Withdrawal) = -(3) | (15) Closing Balance =(12) + (13)+ (14) |
| From Sheet 1 | -349,985 | 0 | -349,985 | -275,865 | -43,219 | | | -349,985 | | | | | | | | |
| 2016 | 140,960 | -10,932 | 130,028 | 110,075 | 19,953 | 130,028 | 0 | 130,028 | 10,932 | 10,932 | 0 | 0 | 0 | 0 | 10,932 | 10,932 |
| 2017 | 87,733 | -15,886 | 71,847 | 59,385 | 12,462 | 71,847 | 0 | 71,847 | 15,886 | 26,817 | 0 | 0 | 10,932 | 109 | 15,886 | 26,926 |
| 2018 | 54,773 | -7,523 | 47,250 | 41,720 | 5,530 | 47,250 | 0 | 47,250 | 7,523 | 34,340 | 0 | 0 | 26,926 | 269 | 7,523 | 34,718 |
| 2019 | 2,648 | 27,826 | 30,473 | 27,400 | 3,073 | 30,473 | 0 | 30,473 | -27,826 | 6,514 | 0 | 0 | 34,718 | 347 | -27,826 | 7,240 |
| 2020 | 17,648 | 5,975 | 23,622 | 21,665 | 1,957 | 23,622 | 0 | 23,622 | -5,975 | 540 | 0 | 0 | 7,240 | 72 | -5,975 | 1,338 |
| 2021 | 32,033 | -6,866 | 25,166 | 12,925 | 1,086 | 14,011 | 11,155 | 25,166 | 18,022 | 18,561 | 0 | 0 | 1,338 | 13 | 6,866 | 8,217 |
| 2022 | 893 | 8,299 | 9,191 | 8,715 | 476 | 9,191 | 0 | 9,191 | -8,299 | 10,263 | 0 | 0 | 8,217 | 82 | -8,299 | 1 |
| 2023 | 35,893 | -3,391 | 32,502 | 4,875 | 273 | 5,148 | 27,354 | 32,502 | 30,745 | 41,007 | 0 | 0 | 1 | 0 | 3,391 | 3,392 |
| 2024 | 0 | 3,010 | 3,010 | 2,895 | 115 | 3,010 | 0 | 3,010 | -3,010 | 37,997 | 0 | 0 | 3,392 | 34 | -3,010 | 416 |
| 2025 | 0 | 400 | 400 | 345 | 55 | 400 | 0 | 400 | -400 | 37,597 | 0 | 0 | 416 | 4 | -400 | 20 |
| 2026 | 0 | 20 | 20 | 0 | 20 | 20 | 0 | 20 | -20 | 37,577 | 0 | 0 | 20 | 0 | -20 | 0 |
| Total ex 2015 | 372,577 | 932 | 373,509 | 290,000 | 45,000 | 335,000 | 38,509 | 373,509 | 37,577 | | 0 | | | | | |

**Underlying Duration Calculation**

| | | | |
|---|---|---|---|
| IRR on Cash Flows (y): | 2.257% | 1.903% | 1.903% |
| Payment Lag (EOP) | Disc Factor | | |
| 1 | 0.978 | 0.981 | 0.981 |
| 2 | 0.956 | 0.963 | 0.963 |
| 3 | 0.935 | 0.945 | 0.945 |
| 4 | 0.915 | 0.927 | 0.927 |
| 5 | 0.894 | 0.910 | 0.910 |
| 6 | 0.875 | 0.893 | 0.893 |
| 7 | 0.855 | 0.876 | 0.876 |
| 8 | 0.836 | 0.860 | 0.860 |
| 9 | 0.818 | 0.844 | 0.844 |
| 10 | 0.800 | 0.828 | 0.828 |
| 11 | 0.782 | 0.813 | 0.813 |
| Macaulay Duration | 2.747 | 2.617 | 2.122 |
| Modified Duration | **2.687** | **2.568** | **2.082** |

Notes

Cells in red are expansions to the educational note *Discounting and Cash Flow Considerations for P&C Insurers* .

(4a) See Revised Educational Note: Discounting and Cash Flow Considerations for P&C Insurers - Appendix B, Sheet 3, row 17.

(4b) See Revised Educational Note: Discounting and Cash Flow Considerations for P&C Insurers - Appendix B, Sheet 3, row 28.

(5) = (4a) + (4b)

**ABC Insurance Company of Canada**
**Premium Liabilities Analysis**
**Net Basis**
**As of December 31, XXXX**
**(000s)**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Class of Insurance** | **Direct UPR** | **Assumed UPR** | **Gross UPR** | **Ceded UPR** | **Net UPR** | **Expected Reinsur. Premium** | **Selected Undisc. Loss Ratio (% Prem)** | **Losses + ALAE** | **Selected ULAE Ratio (% Loss + ALAE)** | **ULAE** | **Undisc. Losses + LAE** |
| Personal Property | 10,000 | 0 | 10,000 | 500 | 9,500 | 500 | 86.0% | 7,740 | -- | 383 | 8,123 |
| Commercial Property | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| Aircraft | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| Auto - Liability - Regular | 50,000 | 0 | 50,000 | 1,000 | 49,000 | 3,000 | 98.0% | 45,080 | -- | 2,250 | 47,330 |
| Auto - PA - Regular | 25,000 | 0 | 25,000 | 3,000 | 22,000 | 1,500 | 115.0% | 23,575 | -- | 1,350 | 24,925 |
| Auto - Other - Regular | 30,000 | 0 | 30,000 | 500 | 29,500 | 1,000 | 67.0% | 19,095 | -- | 918 | 20,013 |
| Auto - Liability - Facility | 1,500 | 0 | 1,500 | 0 | 1,500 | 0 | 93.3% | 1,400 | -- | - | 1,400 |
| Auto - PA - Facility | 750 | 0 | 750 | 0 | 750 | 0 | 93.3% | 700 | -- | - | 700 |
| Auto - Other - Facility | 750 | 0 | 750 | 0 | 750 | 0 | 93.3% | 700 | -- | - | 700 |
| Boiler & Machinery | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| Credit | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| Credit Protection | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| Fidelity | 0 | 0 | 0 | 0 | (0) | 0 | 0.0% | - | -- | - | - |
| Hail | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| Legal Expense | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| Liability - Total | 0 | 5,000 | 5,000 | 1,000 | 4,000 | 250 | 73.0% | 2,738 | -- | 169 | 2,906 |
| Other Approved Products | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| Surety - Total | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| Title | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| Marine | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| Accident & Sickness | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% | - | -- | - | - |
| **Total** | **118,000** | **5,000** | **123,000** | **6,000** | **117,000** | **6,250** | **91.8%** | **101,028** | **--** | **5,069** | **106,097** |

(1) From Prem Liab Ed Note, appendix B, sheet 1, column (1)
(2) From Prem Liab Ed Note, appendix B, sheet 1, column (2)
(3) = (1) + (2)
(4) From company accounting department or annual return
(5) = (3) - (4)
(6) From company
(7) Similar calculation as gross analysis (see Prem Liab Ed Note)
(8) = [ (5) - (6) ]x (7)
(9) n/a
(10) Prem Liab Ed Note, appendix B, sheet 1, column (10)
(11) = (8) + (10)

**ABC Insurance Company of Canada**
**Premium Liabilities Analysis**
**Net Basis**
**As of December 31, XXXX**
**(000s)**

| | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Class of Insurance** | **Discount Factor** | **Discounted Losses + LAE** | **Discount Factor (with MfAD)** | **Discounted Losses + LAE (with Int. PfAD)** | **Interest Rate PfAD** | **Claims Dev't. MfAD** | **Claims Dev't. PfAD** | **Ceded Discounted Losses +ALAE** | **Reinsur. MfAD** | **Reinsur. PfAD** | **Total PfAD** | **Discounted Losses with PfADs** |
| Personal Property | 0.983 | 7,984 | 0.987 | 8,015 | 31 | 7.0% | 559 | 749 | 1.0% | 7 | 597 | 8,581 |
| Commercial Property | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Aircraft | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Auto - Liability - Regular | 0.922 | 43,647 | 0.943 | 44,642 | 994 | 11.0% | 4,801 | 4,277 | 1.0% | 43 | 5,838 | 49,485 |
| Auto - PA - Regular | 0.932 | 23,234 | 0.953 | 23,758 | 524 | 10.0% | 2,323 | 5,833 | 1.0% | 58 | 2,906 | 26,140 |
| Auto - Other - Regular | 0.977 | 19,553 | 0.988 | 19,773 | 220 | 7.0% | 1,369 | 1,275 | 1.0% | 13 | 1,601 | 21,154 |
| Auto - Liability - Facility | 0.929 | 1,300 | 0.929 | 1,300 | 0 | 15.4% | 200 | 0 | 1.0% | 0 | 200 | 1,500 |
| Auto - PA - Facility | 0.929 | 650 | 0.929 | 650 | 0 | 15.4% | 100 | 0 | 1.0% | 0 | 100 | 750 |
| Auto - Other - Facility | 0.929 | 650 | 0.929 | 650 | 0 | 15.4% | 100 | 0 | 1.0% | 0 | 100 | 750 |
| Boiler & Machinery | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Credit | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Credit Protection | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Fidelity | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Hail | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Legal Expense | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Liability - Total | 0.937 | 2,724 | 0.953 | 2,771 | 47 | 10.0% | 272 | 890 | 1.0% | 9 | 328 | 3,052 |
| Other Approved Products | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Surety - Total | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Title | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Marine | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| Accident & Sickness | -- | 0 | -- | 0 | 0 | 0.0% | 0 | 0 | 1.0% | 0 | 0 | 0 |
| **Total** | **0.940** | **99,742** | **0.957** | **101,558** | **1,816** | **9.7%** | **9,725** | **13,024** | **1.0%** | **130** | **11,671** | **111,413** |

(12) Similar calculation as gross analysis (see Prem Liab Ed Note)
(13) = (11) x (12)
(14) Similar calculation as gross analysis (see Prem Liab Ed Note)
(15) = (11) x (14)
(16) = (15) - (13)
(17) Claims development MfAD used for the valuation of claims liabilities
(18) = (13) x (17)
(19) See Prem Liab Ed Note, Appendix C, Sheet 2
(20) Reinsurance MfAD used for the valuation of claims liabilities
(21) = (19) x (20)
(22) = (16) + (18) + (21) [input for P&C annual return Page 30.64, Col (14) ]
(23) = (13) + (22)

**ABC Insurance Company of Canada**
**Premium Liabilities Analysis**
**Net Basis**
**As of December 31, XXXX**
**(000s)**

| | (24) | (25) | (26) | (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Class of Insurance** | **Maint. Expense Ratio (% Gross Prem.)** | **Maint. Expenses** | **Contingent Comm. Rate (% Gross Prem.)** | **Contingent Comm.** | **Premium Liabilities** | **Unearned (Ceded) Comm.** | **Equity in UPR** | **Max. Allowable DPAE** | **Initial DPAE** | **Booked DPAE** | **Premium Deficiency** |
| Personal Property | 3.00% | 300 | 0.00% | 0 | 9,381 | 129 | | | | | |
| Commercial Property | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Aircraft | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Auto - Liability - Regular | 3.00% | 1,500 | 0.00% | 0 | 53,985 | 258 | | | | | |
| Auto - PA - Regular | 3.00% | 750 | 0.00% | 0 | 28,390 | 774 | | | | | |
| Auto - Other - Regular | 3.00% | 900 | 0.00% | 0 | 23,054 | 129 | | | | | |
| Auto - Liability - Facility | 3.00% | 45 | 0.00% | 0 | 1,545 | 0 | | | | | |
| Auto - PA - Facility | 3.00% | 23 | 0.00% | 0 | 773 | 0 | | | | | |
| Auto - Other - Facility | 3.00% | 23 | 0.00% | 0 | 773 | 0 | | | | | |
| Boiler & Machinery | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Credit | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Credit Protection | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Fidelity | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Hail | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Legal Expense | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Liability - Total | 3.00% | 150 | 0.00% | 0 | 3,452 | 258 | | | | | |
| Other Approved Products | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Surety - Total | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Title | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Marine | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| Accident & Sickness | 3.00% | 0 | 0.00% | 0 | 0 | 0 | | | | | |
| **Total** | **3.00%** | **3,690** | **0.00%** | **0** | **121,353** | **1,549** | **(2,804)** | **0** | **20,000** | **0** | **2,804** |

(24) From Prem Liab Ed Note, appendix B, sheet 6, row (10)
(25) = (3) x (24)
(26) Based on company budget and projected loss ratios
(27) = (3) x (26)
(28) = (6) + (23) + (25) + (27)
(29) From company accounting department or annual return
(30) = (5) - (28) + (29)

(31) = max [ (30) , 0 ]
(32) From company accounting department
(33) = min [ (31) , (32) ] [input for P&C return 20.10, row(43)]
(34) = - min [ (30) , 0 ] [input for P&C return 20.20, row (15)]

**ABC Insurance Company of Canada**
**Premium Liabilities Analysis**
**Net Basis**
**As of December 31, XXXX**
**(000s)**

| | (35) | (36) | (37) |
|---|---|---|---|
| **Class of Insurance** | **Premium Liabilities Δy= +0.1%** | **Premium Liabilities Δy= -0.1%** | **Premium Liabilities Effective Duration** |
| Personal Property | | | |
| Commercial Property | | | |
| Aircraft | | | |
| Auto - Liability - Regular | | | |
| Auto - PA - Regular | | | |
| Auto - Other - Regular | | | |
| Auto - Liability - Facility | | | |
| Auto - PA - Facility | | | |
| Auto - Other - Facility | | | |
| Boiler & Machinery | | | |
| Credit | | | |
| Credit Protection | | | |
| Fidelity | | | |
| Hail | | | |
| Legal Expense | | | |
| Liability - Total | | | |
| Other Approved Products | | | |
| Surety - Total | | | |
| Title | | | |
| Marine | | | |
| Accident & Sickness | | | |
| **Total** | **120,997** | **121,920** | **3.803** |

(35) = recalculation of (28) using discount rate + 0.1%
(36) = recalculation of (28) using discount rate - 0.1%
(37) = [(36)-(35)] / [2 x 0.1% ] / (28)

## Premium Liabilities Macaulay Duration

The following is a deterministic approach to demonstrate that the duration of the net premium liabilities can be derived from the duration of a future accident year.

Assume the following:

- i = yield-to-maturity discount rate.
- Assume losses are uniformly distributed and premiums are annual and evenly distributed.
- Let t = timing of payments of a future accident year (0.5/1.5/2.5/etc.) from the valuation or calculation date. For simplification, assume there is only one payment made each year and that the first payment is made at the average accident date.
- $P_t$ is your cash flow payment at time t.
- Let x = difference between the mean accident date of a future accident year and the mean accident date underlying the unearned premium reserve = 1/6 (0.50 less 0.333).

$$Macaulay\ Duration_{AY} = \frac{\sum_t tP_t\,(1+i)^{-t}}{\sum_t P_t\,(1+i)^{-t}}$$

$$Duration_{NPL} \approx \frac{\sum_t (t-x)P_t\,(1+i)^{-(t-x)}}{\sum_t P_t\,(1+i)^{-(t-x)}} = \frac{(1+i)^x \sum_t tP_t\,(1+i)^{-t} - x(1+i)^x \sum_t P_t\,(1+i)^{-t}}{(1+i)^x \sum_t P_t\,(1+i)^{-t}}$$

$$\approx Macaulay\ Duration_{AY} - x$$

- Modified duration can then be calculated by dividing by (1+i).

The following table summarizes the results from the monthly testing of the duration of the premium liabilities performed by the Sub-committee on Premium Liabilities Ed Note Revisions of the Committee on Property and Casualty Insurance Financial Reporting (PCFRC) against the following:

1. Previous CIA interpolation approach with the median average accident date;
2. Previous CIA interpolation approach with the mean average accident date;
3. New approximation using the duration of a future accident year minus an adjustment for accident dates using the mean (.3333); and
4. New approximation using the duration of a future accident year minus an adjustment for accident dates using the median (.2929).

**Summary of Results - Difference versus exact monthly calculation**

| | | Macaulay Duration of the Premium Liabilities | | | |
|---|---|---|---|---|---|
| | | YE 2014 CIA approx using interpolation w/ median AAD | YE 2014 CIA approx using interpolation w/ mean AAD | New Approx assuming w/ mean AAD | New Approx w/ median AAD |
| yield rate | 20.00% | | | | |
| Stable Pattern | | -10.3% | -7.1% | -0.8% | -2.5% |
| Decreasing Pattern | | -13.0% | -8.7% | -1.1% | -3.5% |
| Long Tail | | -11.1% | -7.8% | -0.8% | -2.4% |
| Short Tail | | -15.4% | -5.2% | -0.8% | -9.8% |
| yield rate | 10.00% | | | | |
| Stable Pattern | | -9.2% | -6.2% | -0.4% | -2.0% |
| Decreasing Pattern | | -11.8% | -7.8% | -0.6% | -2.8% |
| Long Tail | | -10.0% | -6.8% | -0.4% | -2.0% |
| Short Tail | | -15.2% | -5.1% | -0.5% | -9.4% |
| yield rate | 3.50% | | | | |
| Stable Pattern | | -8.5% | -5.6% | -0.1% | -1.7% |
| Decreasing Pattern | | -11.0% | -7.1% | -0.2% | -2.4% |
| Long Tail | | -9.2% | -6.2% | -0.1% | -1.7% |
| Short Tail | | -15.0% | -5.0% | -0.2% | -9.0% |
| yield rate | 0.00% | | | | |
| Stable Pattern | | -8.1% | -5.3% | 0.0% | -1.5% |
| Decreasing Pattern | | -10.5% | -6.7% | 0.0% | -2.1% |
| Long Tail | | -8.8% | -5.8% | 0.0% | -1.5% |
| Short Tail | | -14.9% | -4.9% | 0.0% | -8.7% |

Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

*Minor Amendment to Educational Note*

# Evaluation of the Runoff of P&C Claim Liabilities when the Liabilities are Discounted in Accordance with Accepted Actuarial Practice

## Committee on Property and Casualty Insurance Financial Reporting

**June 2011**

Document 211064

*Ce document est disponible en français*

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*Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute Standards of Practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying Standards of Practice in respect of specific matters. Responsibility for the manner of application of Standards of Practice in specific circumstances remains that of the members in the P&C insurance area.*

Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

# Memorandum

**To:** All Fellows, Associates, Affiliates and Correspondents of the Canadian Institute of Actuaries

**From:** Tyrone G. Faulds, Chair
Practice Council

Pierre Dionne, Chair
Committee on Property and Casualty Insurance Financial Reporting

**Date:** June 9, 2011

**Subject:** **Minor Amendment to Educational Note: Evaluation of the Runoff of P&C Claim Liabilities when the Liabilities are Discounted in Accordance with Accepted Actuarial Practice**

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The Committee on Property and Casualty Insurance Financial Reporting has revised the attached Educational Note. The primary purpose of this document is to provide guidance to property and casualty (P&C) actuaries who are required to prepare an evaluation of the runoff of the claim liabilities when claim liabilities are discounted.

In accordance with the Institute's Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice, this educational note has been prepared by the Committee on Property and Casualty Insurance Financial Reporting, and has received final approval for distribution by the Practice Council on June 9, 2011.

As outlined in subsection 1220 of the Standards of Practice, "*The actuary should be familiar with relevant Educational Notes and other designated educational material.*" That subsection explains further that a "practice which the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation." As well, "Educational Notes are intended to illustrate the application (but not necessarily the only application) of the Standards, so there should be no conflict between them."

Additional guidance on discounting is available in Educational Note 210079 – Discounting, published by the CIA in November 2010.

If you have any questions or comments regarding this educational note, please contact Pierre Dionne at his CIA Online Directory address, pdionne@ccr.fr.

TGF, PD

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## INTRODUCTION

The primary purpose of this document is to provide guidance to property and casualty (P&C) actuaries who are required to prepare a comprehensive report on the valuation of the policy liabilities and an evaluation of the runoff of the claim liabilities.

When claim liabilities are derived on an undiscounted basis, the most common means used by actuaries to evaluate the runoff is through a comparison of the estimated ultimate incurred amounts at successive valuation dates. Another common approach is to compute the calendar year runoff as the amounts paid during the calendar year, plus the change in outstanding amounts from the prior valuation, which is consistent with the calculation of the calendar year incurred claims in the insurer's income statement. These approaches must be modified or replaced in order to properly evaluate the runoff when the claim liabilities are derived on a discounted basis, in accordance with accepted actuarial practice.

The guidance provided in this note may be appropriate for the valuation of the runoff of other liabilities, including self-insured retention.

This document is divided into three sections:

discussion of the basic approaches to the evaluation of runoff of claim liabilities,

an accident year runoff model, and

allocation of investment income between liabilities and surplus.

## 1. BASIC APPROACHES TO THE EVALUATION OF RUNOFF OF CLAIM LIABILITIES

### 1.1 Undiscounted Basis

The runoff, or calendar year emergence, is generally computed in one of two ways, both of which should produce the same result.

(a) Emergence in $t$ with respect to accident years $t-1$ and prior

= (Ultimate amounts estimated at $t-1$) – (ultimate amounts estimated at $t$)

This calculation can also be done on a policy year or underwriting year basis, except that the second term must be adjusted to exclude the portion of policy year $t-1$ that is earned in calendar year $t$.

(b) Emergence in $t$ with respect to accident years $t-1$ and prior

= (Claim liabilities at $t-1$) – (Paid during $t$) – (Claim liabilities at $t$)

This calculation can also be done on a policy year or underwriting year basis, except that the second and third terms must be adjusted to exclude the portion of policy year $t-1$ that is earned in calendar year $t$.

The choice of (a) or (b) depends on the available data, regulatory or management requirements, if any, and the actuary's preference.

### 1.2 Discounted Basis

Equation (a) above, or the comparison of the estimated ultimate incurred amounts, may provide useful information regarding the discounted claim liabilities, but this approach is not readily

adjusted to encompass the effect of the time value of money, and the provision for adverse deviations.

Equation (b) in item 1.1 above would be modified by

discounting the amounts in the second and third terms to time *t-1* (i.e., calculate the present value of the cash flows); or

subtracting a term for the portion of the investment income earned during calendar year *t* on assets supporting the liabilities.

These adjustments should produce equivalent results but the second approach is simpler, both in terms of the calculations and the presentation. The models presented in sections 2 and 3 of this document are based on the second approach.

For the purposes of the Appointed Actuary's report, it would be useful to identify the components of the runoff (i.e., the contribution of the undiscounted claim liabilities, changes in the discount rate, and changes in the provision for adverse deviations).

## 2. ACCIDENT YEAR RUNOFF MODEL

The model is best illustrated through a simple calendar year (CY) example, as shown below.

| EXCESS (DEFICIENCY) DURING CY 6 – BY ACCIDENT YEAR | | | | | |
|---|---|---|---|---|---|
| **Accident Year** | **Paid Losses During CY 6 (1)** | **Discounted Claim Liabilities 31/Dec/6 (2)** | **Discounted Claim Liabilities 31/Dec/5 (3)** | **Investment Income in CY 6 On Unpaid Claims (4)** | **Excess (Deficiency) During 6 (5)** |
| 1 | 2,000 | 3,000 | 6,000 | 270 | 1,270 |
| 2 | 3,000 | 7,000 | 12,000 | 570 | 2,570 |
| 3 | 4,000 | 10,000 | 17,000 | 810 | 3,810 |
| 4 | 6,000 | 19,000 | 26,000 | 1,350 | 2,350 |
| 5 | 16,000 | 29,000 | 44,000 | 2,190 | 1,190 |
| **Subtotal** | **31,000** | **68,000** | **105,000** | **5,190** | **11,190** |
| 6 | 40,000 | 44,000 | - | 1,320 | |
| **Total** | **71,000** | **112,000** | **105,000** | **6,510** | |

(Amounts in $000s)

(1) From exhibit—table 1.

(2) From exhibit—table 2.

(3) From exhibit—table 2.

(4) From exhibit—table 2 = average lines CY 5 and CY 6 for each accident year x annual yield.

In this example, for accident year 5, the average outstanding claims was (29,000 + 44,000)/2 or 36,500. In the example, the annual yield was 6%. So, 6% x 36,500 = 2,190. (Results presented in table 3.)

(5) From exhibit—table 4: line CY 6 [(3) + (4)] – [(1) + (2)].

Section 3 of this document addresses the methodology and assumptions underlying the allocation of the investment income in column (4) above.

The model may be expanded to monitor the runoff over a period of time as shown in tables 5 and 6.

## 3. ALLOCATION OF INVESTMENT INCOME BETWEEN LIABILITIES AND SURPLUS

The investment income attributable to policy liabilities should be determined. If the assets are allocated (e.g., surplus vs. operations), then the runoff would be calculated consistent with that allocation. The basis for allocation would be consistent with the investment policy of the company and the basis used by the actuary in discounting the policy liabilities. The basis for allocation would be properly documented. In a situation where there is no formal allocation, the default yield rate would be based on the same calculation as used in the P&C-1 or P&C-2 exhibit 10.60. The actuary is referred to the Educational Note on Discounting (Document 210079—November 2010) for guidance on different approaches to select a discounting rate.

The investment income attributable to policy liabilities can be obtained by

multiplying the selected yield rate by

the average of the starting and ending values of

+ net unpaid claims
+ net unearned premium
– gross DPAC
+ premium deficiency provisions
+ unearned commissions
– agents, brokers and policyholders receivables
– instalment premiums.

If the default yield rate is used for the allocation, then the investment income attributable to policy liabilities would be compared to the overall investment income. If necessary, the investment income on policy liabilities (using the total investment income as a cap) would be reduced and the yield for runoff purposes would be recalculated. This will happen if the invested assets are less than the policy liabilities less the respective receivables. If the overall investment income is negative, then the resulting negative yield should be used for runoff purposes, i.e., the runoff is penalized, again subject to cap, i.e., the negative investment income on policy liabilities would be capped per the overall negative investment income.

A simple approach to calculate the investment income attributable to assets backing the net unpaid claims is to multiply the investment yield by the mean net claim liabilities.

If necessary, the calculation of the investment income attributable to assets backing the net premium liabilities can be performed in a similar manner. The investable assets are considered to be equal to the net unearned premium plus the premium deficiency provisions and unearned

commissions, reduced by gross DPAC, agents, brokers and policyholders' receivables and instalment premiums.

## EXHIBITS

| **Table 1—Paid Losses During the Calendar Year (CY)** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Accident Year** | | | | | | |
| **As of CY** | **1** | **2** | **3** | **4** | **5** | **6** | **Total** |
| **1** | 42,000 | | | | | | 42,000 |
| **2** | 18,000 | 43,000 | | | | | 61,000 |
| **3** | 10,000 | 16,000 | 44,000 | | | | 70,000 |
| **4** | 4,000 | 8,000 | 12,000 | 40,000 | | | 64,000 |
| **5** | 3,000 | 5,000 | 9,000 | 15,000 | 39,000 | | 71,000 |
| **6** | 2,000 | 3,000 | 4,000 | 6,000 | 16,000 | 40,000 | 71,000 |

| **Table 2—Discounted Claim Liabilities** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Accident Year** | | | | | | | |
| **As of CY** | **1** | **2** | **3** | **4** | **5** | **6** | **Total** | **Annual Yield** |
| **1** | 48,000 | | | | | | 48,000 | 7.50% |
| **2** | 29,000 | 47,000 | | | | | 76,000 | 7.00% |
| **3** | 18,000 | 29,000 | 43,000 | | | | 90,000 | 6.50% |
| **4** | 11,000 | 19,000 | 29,000 | 42,000 | | | 101,000 | 6.50% |
| **5** | 6,000 | 12,000 | 17,000 | 26,000 | 44,000 | | 105,000 | 6.00% |
| **6** | 3,000 | 7,000 | 10,000 | 19,000 | 29,000 | 44,000 | 112,000 | 6.00% |

| Table 3—Investment Income on Unpaid Claims | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Accident Year | | | | | | |
| **As of CY** | **1** | **2** | **3** | **4** | **5** | **6** | **Total** |
| **1** | 1,800 | | | | | | 1,800 |
| **2** | 2,695 | 1,645 | | | | | 4,350 |
| **3** | 1,528 | 2,470 | 1,398 | | | | 5,400 |
| **4** | 943 | 1,560 | 2,340 | 1,365 | | | 6,210 |
| **5** | 510 | 930 | 1,380 | 2,040 | 1,320 | | 6,180 |
| **6** | 270 | 570 | 810 | 1,350 | 2,190 | 1,320 | 6,510 |

| Table 4—Excess (Deficiency) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Accident Year | | | | | | |
| **As of CY** | **1** | **2** | **3** | **4** | **5** | **6** | **Total** |
| **1** | | | | | | | — |
| **2** | 3,700 | | | | | | 3,700 |
| **3** | 2,530 | 4,470 | | | | | 7,000 |
| **4** | 3,940 | 3,560 | 4,340 | | | | 11,840 |
| **5** | 2,510 | 2,930 | 4,380 | 3,040 | | | 12,860 |
| **6** | 1,270 | 2,570 | 3,810 | 2,350 | 1,190 | | 11,190 |

| Table 5—Cumulative Excess | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Accident Year | | | | | | |
| **As of CY** | **1** | **2** | **3** | **4** | **5** | **6** | **Total** |
| **1** | | | | | | | |
| **2** | 3,695 | | | | | | |
| **3** | 6,223 | 4,470 | | | | | |
| **4** | 10,165 | 8,030 | 4,340 | | | | |
| **5** | 12,675 | 10,960 | 8,720 | 3,040 | | | |
| **6** | 13,945 | 13,530 | 12,530 | 5,390 | 1,190 | | |

| **Table 6—Cumulative % Excess Ratio** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Accident Year** | | | | | | |
| **As of CY** | **1** | **2** | **3** | **4** | **5** | **6** | **Total** |
| **1** | | | | | | | |
| **2** | 7.70% | | | | | | |
| **3** | 12.96% | 9.51% | | | | | |
| **4** | 21.18% | 17.09% | 10.09% | | | | |
| **5** | 26.41% | 23.32% | 20.28% | 7.24% | | | |
| **6** | 29.05% | 28.79% | 29.14% | 12.83% | 2.70% | | |

Canadian Institute of Actuaries | Institut canadien des actuaires

# *Educational Note*

# Financial Condition Testing

## Committee on Risk Management and Capital Requirements

**April 2020**

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*The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.*

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# MEMORANDUM

**To:** All members in the Life, Property and Casualty, and Mortgage Insurance Practice Areas

**From:** Steven W. Easson, Chair
Actuarial Guidance Council

Michelle Lindo, Chair
Committee on Risk Management and Capital Requirements

**Date:** April 27, 2020

**Subject:** **Educational Note—Financial Condition Testing**

The Canadian Institute of Actuaries (CIA) published its last revised educational note on Dynamic Capital Adequacy Testing (DCAT) in November 2017. This educational note has been renamed and updated to reflect revisions to the Standards of Practice (SOP) – Insurance, Section 2500 – Financial Condition Testing (FCT), which was approved by the Actuarial Standards Board (ASB) on September 10, 2019, with an effective date of January 1, 2020.

**Background**

The objectives of the revisions to Section 2500 Dynamic Capital Adequacy Testing are to:

- Provide a more robust approach to satisfy the federal and provincial insurance acts requirement to report on the expected future financial condition of an insurance entity.
- Allow for a better alignment with Own Risk and Solvency Assessment (ORSA) regulatory requirements as they relate to work needed to report on the expected future financial condition of an insurance entity.

Insurers' specific size, complexity, and other circumstances may have a significant influence on the appropriate level of harmonization between Section 2500 and ORSA. The changes to Section 2500 do not prescribe the level of harmonization, nor does the educational note.

**Changes to the SOP**

Changes to the SOP include:

a) Renaming of Dynamic Capital Adequacy Testing (DCAT) to Financial Condition Testing (FCT);

b) Revised threshold testing of the base scenario to internal target capital ratio(s) as determined by ORSA rather than regulatory supervisory level(s);

c) Testing of “satisfactory financial condition” using both going concern and solvency scenarios;
   - The threshold for “going concern” scenarios is the minimum regulatory target.
   - The threshold for “solvency” scenarios is that the statement value of assets is sufficient to cover the statement value of the liabilities.

d) Three options for the opinion of the actuary:
   - Satisfactory;
   - Satisfactory subject to…;
   - Not satisfactory.

e) Elimination of specifications on the number of years for the review of the recent financial position and forecast period;

f) Removal of the detailed listing of risk categories;

g) Distinction made between ripple effects (which may include management’s routine actions) and corrective management actions; and

h) Ability to harmonize with ORSA.

**Updates to the educational note**

The educational note provides additional guidance to the actuary on the above topics in the revised SOP. Notable updates include:

a) Recommended minimum percentiles for going concern and solvency scenarios.

b) A decision grid to illustrate the options for the opinion of the appointed actuary.

c) Typical forecast periods are provided, but the choice would be subject to the judgment of the actuary, relevant to the scenario, and consistent with ORSA, if applicable.

d) Retention of risk categories but moved to appendices.

e) Examples of ripple effects and corrective management actions – acknowledging that the classification of a ripple effect or a corrective action would depend on the circumstances of the insurer.

f) Suggestions for possible integration with ORSA in a consolidated report.

g) Recommended that the FCT report contain a minimum of three adverse scenarios (at least one going concern and two solvency scenarios).

A draft of this educational note was exposed to the membership from December 2019 until February 28, 2020. Comments were received from regulators, other committees of the CIA, insurers and members.

The chair of the working group compiled the responses received and shared the comments with the working group. Most of the comments were editorial in nature, and were addressed through minor edits to the exposure draft.

In one comment, a concern was expressed that the severity level of the solvency scenarios tested could decrease compared to the former DCAT scenarios since the range of 95th – 99th

percentile was revised to a minimum of 95th percentile. However, the working group did not want to specify a maximum, since some scenarios tested by the industry (e.g. earthquake scenario) already exceed the 99th percentile. Instead, wording was added to the Ed Note as follows: "Although this guideline suggests this minimum, it is strongly recommended that analysis be performed at even higher confidence levels and it would not be unreasonable to conduct scenario testing at the 99th percentile or beyond. "

**Process**

The creation of this cover letter and educational note has followed the Actuarial Guidance Council's (AGC's) Protocol for the adoption of educational notes. In accordance with the CIA's *Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice and Research Documents*, this educational note has been prepared by the Committee on Risk Management and Capital Requirements (CRMCR), and has received approval for distribution by the Actuarial Guidance Council on April 14, 2020.

**Responsibility of the actuary**

The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.

**Working group**

CRMCR would like to acknowledge the contribution of the working group that assisted in the development of this educational note: David Kroach (Chair), Nicolas Beaudoin, Marisa Chan, David Gourlay, Marc-André Harvey, Ritchie Hok, Bruce Langstroth, Anh Tu Le, Michelle Lindo, Christian Nadeau-Alary, and Valerio Valenti.

**Your feedback**

Feedback on all aspects of the proposed changes, as well as suggestions for other changes not presented in this educational note, are encouraged.

If you have any questions or comments regarding this educational note, please contact Michelle Lindo at MLindo@munichre.ca.

SWE, ML

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## 1. Introduction

The primary purpose of this document is to provide guidance and support to actuaries of life and property and casualty (P&C) insurers in performing Financial Condition Testing (FCT) analyses in accordance with the Standards of Practice (SOP) – Insurance, Section 2500.

According to paragraphs 2520.01 to 2520.04 of the SOP:

> The appointed actuary should make an investigation at least once during each financial year of the insurer's recent and current financial position and financial condition, as revealed by financial condition testing for selected scenarios.
>
> The appointed actuary should make a report of each investigation in writing to the insurer's board of directors (or to the appropriate committee of the board such as audit committee, risk committee, etc., if they so delegate) or its chief agent for Canada. The report should identify possible actions, and reasons for those actions, for dealing with any threats to satisfactory financial condition that the investigation reveals. The actuary should also comment on the consistency of the results of the investigation and possible actions with the own risk and solvency assessment (ORSA).
>
> The appointed actuary should ensure that the investigation is current. The investigation should take into consideration recent events and recent financial operating results of the insurer.
>
> The timing and frequency of the appointed actuary's investigations would be sufficient to support timely corrective actions by management and the board of directors or chief agent for Canada.

FCT is one of a number of stress-testing processes that would fit within the insurer's overall risk management process. The FCT process allows management to understand implications the business plan has on capital and provides awareness of the significant risks to which the insurer is exposed. The principal goals of the FCT are to identify possible threats to the financial condition of the insurer and appropriate risk management or corrective actions to address those threats, while considering the ORSA solvency analysis, conclusions, and recommendations. The FCT process should not be viewed as merely a compliance exercise.

Stress testing includes scenario testing and sensitivity testing (refer to the glossary in Office of the Superintendent of Financial Institutions (OSFI) Guideline E-18 – Stress Testing, or to l'Autorité des marchés financiers (AMF) Stress Testing Guideline, for definitions). Stress testing has the following goals:

1. Risk identification and control – stress testing may exist at various levels within an insurer, ranging from risk mitigation policies at a detailed or portfolio level to adjusting the institution's business strategy. It can be used to address institution-wide risks and consider concentrations and interactions between risks in stress environments that might otherwise be overlooked. Knowing the sources of threat will help advise the insurer where it is most vulnerable and should strengthen monitoring systems.
2. Provide a complementary risk perspective to other risk management tools – stress tests would complement risk quantification methodologies that are based on complex, quantitative models using historical data and estimated statistical relationships. Stress-

testing outcomes can provide insights about the validity of statistical models at high confidence intervals such as those used to determine value at risk (VaR).

Stress testing can help the insurer assess possible changes in the economic and financial environment. Stress tests can also help detect vulnerabilities, such as unidentified risk concentrations or potential interactions between types of risk, that could threaten the viability of the institution, which may be concealed when relying purely on statistical risk management tools based on historical data. Stress testing can also be used to assess the impacts of customer behaviour arising from options embedded in products, particularly where the behaviour in extreme events is not well understood.

3. Support capital management – stress testing would form an integral part of an institution's internal capital management where rigorous, forward-looking stress testing can identify severe events, including a series of compounding events or changes in market conditions.
4. Improve liquidity management – stress testing would be a central tool in identifying, measuring, and controlling funding liquidity risks, in particular for assessing the institution's liquidity profile and the adequacy of liquidity buffers in case of both institution-specific and market-wide stress events.

It is essential that the board of directors or chief agent and senior management are involved in the determination of the stress scenarios and understand the key findings of the stress tests to develop and implement risk mitigation strategies. Risk concentration would be considered throughout the stress-testing process.

FCT has the following key elements:

- Development of a base scenario.
- Development of adverse scenarios.
- Identification and analysis of the effectiveness of corrective management actions to mitigate risks.
- A report on the results of the analysis and recommendations to the insurer's management and the board of directors or chief agent.
- An opinion signed by the Appointed Actuary (AA) indicating the financial condition of the insurer.

The subsequent sections of this document cover the following:

- Method – this section provides guidance on the FCT process, forecast period, and approaches to developing the base scenario and adverse scenarios.
- Modelling – this section identifies key elements to be considered in building an FCT model used to project the financial results under the base and selected adverse scenarios.
- Reporting – this section provides guidance on key elements to be considered in reporting the results of FCT, along with an outline of a typical report.
- Appendices – discussion and analysis of life insurer and property and casualty insurer risk categories.

## 2. Method

**Process**

The FCT is used for risk identification and control, and assesses threats to an insurer's financial condition. ORSA further enhances an insurer's understanding of the interrelationships between its risk profile and capital needs, comprehensively addressing the risk universe, including elements such as operational, strategic, and business risks. Both processes share the commonality of relating risk to capital and, by their nature, are complementary, so some level of consistency between the two processes would be expected. The AA would assess the level of consistency necessary in such areas as, but not limited to, the modelling of ripple effects, the selection of adverse scenarios, the forecast periods, and the consistency of messages.

It is fundamental to this process, and to the proper interpretation of results, to understand that the projected capital position under various scenarios may become inadequate during the forecast period. This is not in itself an indication of current or anticipated difficulties. It is the specific degree and timing of capital depletion that indicate the risks to which the insurer is particularly sensitive. This, together with the results under the base scenario, would guide the insurer as to the necessity of revising the business plan or preparing for contingencies.

To perform FCT, it is necessary to understand the regulatory capital minimum(s) and the insurer's internal target capital requirements. If the internal target is established using a different capital benchmark, it would be translated to the equivalent internal target ratio(s) under the current regulatory regime. It is recommended that the AA verify the current regulatory requirements for his or her own insurer's situation and review any applicable guidelines and educational notes. The AA would also understand the risk categories (see Appendices A and B for potential risk categories to be considered) posing the most significant threats to the insurer, including the impact of any ripple effects.

**Approach**

A typical approach would include the following steps:

- Review of operations for recent years and of the financial position at the end of each of them. The number of years reviewed depends on its relevance to the future financial position.
- Development and modelling of the base scenario. As stated in the SOP, this would normally be consistent with the insurer's business plan.
    - Assess potential risks and identify those that are relevant to the insurer's circumstances. Sensitivity testing may be used to determine the relevant risk categories warranting further analysis.
    - In the event of a new regulatory requirement or change in standards, it may be necessary to perform additional analysis as the sensitivities to certain risk factors may change.
- Selection of adverse scenarios requiring further analysis for relevant risk categories to be applied across all business and product lines:
    - Development and modelling of adverse scenarios likely to significantly impact the

insurer's regulatory capital level and surplus. The scenarios may be single-risk scenarios, or integrated scenarios resulting from a combination of single-risk scenarios. The stress tests would cover a range of scenarios, including any new scenarios with emerging risks. Stress testing may be used to determine the adverse scenarios.

  - Identification and modelling of associated system-wide interactions and feedback effects (ripple effects and macroeconomic effects) caused by a change in assumptions triggered by the scenario.
  - Depending on the insurer's circumstances, the board of directors or chief agent and management may also be interested in situations that cross other break points, in which case further stress testing may be beneficial.

- Selection of scenarios for inclusion in the report from those modelled showing the greatest sensitivities, where such sensitivity is based on the type of scenario and the associated thresholds being tested. For each scenario, identification of possible corrective management actions and presentation of financial condition results with and without such actions. In addition, commentary would be included on the rationale for those actions and the extent to which such actions are necessary and achievable and why they are expected to mitigate and/or eliminate the threats to satisfactory financial condition. Any possible constraints on identified corrective management actions would be taken into account.
- Identification of possible regulatory actions for each scenario. For best practices purposes, it would be preferable to also identify possible regulatory actions that may be triggered as a result of falling below any threshold set by the regulator(s).

**Recent and current financial position**

Paragraph 2520.05 of the SOP states the following:

> The investigation would review operations of recent years and the financial position at the end of each of those years.

The review would include the statement of income and source of earnings (if available) for each year and the financial position at the end of each year, including the balance sheet and the results of the applicable regulatory tests of capital adequacy. The AA would analyze recent trends in these statements and investigate the circumstances and key factors contributing to those trends to ensure awareness of the reasons underlying any such recent trends and report on these findings.

**Forecast period**

Paragraph 2520.15 of the SOP states the following:

> The forecast period for a scenario would be sufficiently long to be aligned with the risk emergence and the recognition of impacts through the accounting and solvency results, and to capture the effect of management actions.

The SOP does not prescribe a minimum length for the forecast period. However, the following would be considered:

- The forecast period would be long enough to incorporate the vast majority of an adverse scenario impacts on the financial condition of an insurer, including ripple effects, and long enough to assess the recovery period of any corrective management actions. The context of

the risk being stressed would be considered, as it is recognized that some risks evolve over significantly long periods, such as those related to climate risk.

- The length of the forecast period would be aligned with the risk emergence and the recognition of impacts through accounting and solvency (e.g., the horizon over which accounting impacts are recognized may be different than those for capital, such as those related to segregated fund guarantees).
- A typical forecast period for an insurer is three to five fiscal years. It is recommended that the AA use judgment in assessing the forecast period and describe the reasoning in the report.
- Consistency of the forecast period with similar analysis, such as the ORSA.

**Materiality standard**

The standard of materiality would usually be less rigorous than that used for valuation of the insurer's policy liabilities and, if practical, the AA would discuss it with the insurer's management. In selecting a materiality standard, the AA would also consider:

- The size of the insurer.
- The financial position of the insurer. The standard of materiality would become more rigorous in examining a base scenario where capital adequacy is closer to the target regulatory requirement.
- The nature of the regulatory test. For example, if the test is measuring required capital, the materiality standard might be expressed as a percentage of the required capital.

For more guidance on materiality, refer to subsection 1240 of the Standards of Practice.

**Base scenario**

According to paragraph 2520.17 of the SOP:

> The base scenario would be a realistic set of assumptions used to forecast the insurer's financial position over the forecast period. Normally, the base scenario would be consistent with the insurer's business plan. The actuary would accept the business plan's assumptions for use in the base scenario unless these assumptions are so inconsistent or unrealistic that the resulting report would be misleading. The actuary would report any material inconsistency between the base scenario and the business plan.

The standard does not necessarily imply that the projected financial results and future financial positions would be identical to the projections prepared at the time the insurer's business plan was approved. Typically, there is a difference between the timing of the starting balance sheet date for the FCT analysis and the timing when the business plan was approved. During this time, events may have occurred that lead to definitive changes in assumptions. As stated above, the projection of the future financial condition would reflect any material change that has occurred during this time. The projected financial results and future financial positions may continue to be consistent with the business plan while still recognizing the following:

- Sales distribution assumptions that differ from those expected in the business plan.
- Recent management decisions not anticipated or discussed in the business plan.

- Changes in the capitalization of the insurer not expected in the business plan.
- The impact on future experience, where appropriate, due to actual recent experience, assumptions, or decisions as described above.

If differences are material, a reconciliation of the base scenario to the business plan would be included in the FCT report. It is expected that significant deviations from assumptions in the insurer's plan approved by the directors, as well as significant deviations in the results for the forecast period, would be documented. Where differences in the base scenario are not due to a recent reforecast of the business plan, the AA would run the business plan as an additional scenario to ascertain the deviations in the results and explain the rationale for the changes. Any differences between the business plan and the base scenario would, typically, also affect all adverse scenarios.

Clear reporting of assumptions made regarding capital injections is essential. There will be some situations where capital injections are a basic part of an insurer's business plan; for example, when the business plan calls for an insurer to grow quickly or is intending a major initiative in a new sphere of operations. In any scenario where capital injections are assumed, it is expected that the AA would comment on the action in the FCT report and is comfortable that such injections are both realistic and reasonable.

**Adverse scenarios**

According to paragraphs 2520.18 and 2520.19 of the SOP:

> An adverse scenario is developed by stress testing the assumptions used in forecasting the business plan, including the determination of insurance contract liabilities, with regard to risk factors that may trigger potential threats to the insurer's financial condition. The number and types of adverse scenarios may vary among insurers and over time for a particular insurer.
>
> The actuary would consider material, plausible risks or events to the insurer. Reverse stress testing can help assess whether certain risk factors need to be tested, on the grounds that certain risk factors could never deteriorate to the point where they would be a threat to the insurer's financial condition. The actuary can thereby determine whether a material, plausible risk or event exists for the insurer over the forecast period.

An insurer would consider the impact of a range or series of adverse scenarios of varying nature or severity and its ability to meet the specified thresholds indicated for going concern and solvency scenarios. The actuary would consider threats under adverse scenarios that include, but are not limited to, the common risk categories for life and P&C insurers as listed in Appendices A and B in order to develop adverse scenarios to be modelled. From the adverse scenarios, the AA would select those showing the greatest sensitivity and examine them in further detail, considering associated ripple effects. Any modelled scenario that causes the insurer to fall below, or come close to, the defined threshold during the forecast period would be subject to further examination and reporting. The AA would consider the ORSA, the insurer's stress testing program, any scenario prescribed by the regulator, and whether the circumstances of the insurer result in the need to examine other risk categories.

Adverse scenarios build on the assumptions and actual experience already reflected in the base scenario. This is particularly true if the first part of the projection of the base scenario already reflects some adverse conditions that have been experienced. Both base and adverse scenarios

would remain consistent and therefore if the base scenario does not reflect adverse experience already seen (because this is projected to improve in the future), neither would the adverse scenarios.

If possible, policy liabilities would be revalued or appropriately estimated for each adverse scenario for each year of the projection. Revaluation only at the end of the forecast period may be a suitable compromise if the actuary believes, given the financial position at the end of the forecast period, that the financial condition would be satisfactory throughout the forecast period.

Scenarios would be framed in the context of the key thresholds being tested when consolidating results. In situations where it is unclear as to the severity of the scenario, the AA would use judgment to determine the appropriate grouping and therefore threshold to be tested.

Both deterministic and stochastic models can be used to perform the analysis. For risks where no stochastic models with predictive capabilities are available, the AA would consider the variability in historical results and credibility of data, among other things, in selecting scenarios.

Reverse stress testing may be used as a means to develop adverse scenarios and determine how far risk factor(s) in question have to change in order to drive the insurer below the scenario thresholds and evaluating if that degree of change is plausible and helps insurers better understand the impact of business vulnerabilities. Reverse stress testing begins with the assumption that a specific outcome occurs, in the instance of a solvency scenario where the insurer's surplus becomes negative during the forecast period. A sequence of events in a scenario, whether concurrent or over a period of time, producing the desired outcome are identified, where the events may or may not be more severe than those seen historically. An evaluation is then performed to determine whether that degree of change is plausible in the context of what is being tested. The results of reverse stress testing can also help with strategic business decisions, contingency planning (i.e., corrective management action), and designing risk management arrangements.

It is expected that the AA would report on the considerations for determining the adverse scenarios, including any consideration of reverse stress testing. The stress testing performed as part of the ORSA and any other similar analysis could be considered in the selection of the adverse scenarios, or vice versa. The stress testing performed by the insurer can be harmonized for FCT, ORSA, and any other testing. It is expected that adverse scenarios showing the greatest sensitivities would be discussed in the report in detail.

**Solvency scenarios**

According to paragraph 2520.18.1 of the SOP:

> A solvency scenario is a plausible adverse scenario if it is credible and has a non-trivial probability of occurring. The actuary may use percentile rankings of outcomes to determine whether a solvency scenario is both plausible and adverse.

In a solvency scenario an insurer would be expected to test the occurrence of events that are of such severity that it tests its ability to maintain a positive surplus position.

A solvency scenario employs a plausible adverse scenario, recommended at a minimum of the 95$^{th}$ percentile over the scenario horizon. Although this guideline suggests this minimum, it is strongly recommended that analysis be performed at even higher confidence levels and it would not be unreasonable to conduct scenario testing at the 99$^{th}$ percentile or beyond. If the AA is unable to

ascertain the percentile severity of the scenario, the AA would be comfortable that the scenario is of sufficient adversity to appropriately test the relationship of the insurer's statement value of assets to its liabilities.

A solvency scenario could align with the level of shocks used in the Own Risk and Solvency Assessment (E-19) analysis.

**Going concern scenarios**

According to paragraph 2520.19.1 of the SOP:

> A going concern scenario is an adverse scenario that is more likely to occur and/or less severe than a solvency scenario, and could include risks not considered in solvency scenarios.

A going concern scenario is intended to test an insurer's ability, through its developing capital position, ripple effects, and corrective management actions, to maintain operations and meet its obligations while meeting or exceeding regulatory minimum levels. The scenario would maintain sufficient capital resources, as defined in the OSFI Regulatory Capital and Internal Capital Targets Guideline (A-4) or in the AMF Capital Adequacy Requirements for Life and Health Insurance (CARLI) or Minimum Capital Test (MCT) guidelines, to meet or exceed minimum regulatory levels of capital required to support their risks.

A going concern scenario would utilize an adverse scenario at a lower percentile and lower severity than that used for solvency scenarios over the scenario horizon. Typically testing would be performed using a minimum of the 90$^{th}$ percentile. If the AA is unable to ascertain the percentile severity of the scenario, the AA would be comfortable that the scenario is of sufficient adversity to appropriately test the insurer's regulatory capital ratio(s). Relative to assumptions used in a solvency scenario, a going concern scenario may examine the same type of stressed assumption(s) but alter it in some manner to reduce its severity and/or assume it is more likely to occur. Examples include, but are not limited to, testing a smaller stressed assumption(s) over the same horizon or a more gradual deterioration in the stressed assumption(s).

In some cases, a solvency scenario could also function as a going concern scenario if a sufficiently adverse solvency scenario would also be deemed satisfactory under the going concern requirements.

**Management actions**

Management responses to stress impacts may be classified as either ripple effects or corrective management actions. As the distinction between the two is critical to the development of the opinion statement, the actuary will need to carefully assess the appropriate categorization of the management actions.

Such actions could include but are not limited to:

- Repricing of insurance products.
- Regular policyholder dividend scale updates.
- Adjustments to non-guaranteed product elements.
- Suspending dividend payments, and reduced capital transfers to the parent or home office, where applicable.

- Raising additional capital or adopting an approved plan to raise additional capital if and when needed within a reasonable time frame, or, in the case of a branch, requesting transfer of adequate funds from the parent company.
- Strengthening risk management practices.
- Mitigating the risk causing the capital shortfall.
- An increased level of monitoring and reporting of the insurer's capital position.

The AA would inform management of potential regulatory actions and repercussions and would consider when it may be appropriate to model or calculate the financial impact of such actions. The financial impact of regulatory actions could be significant, and the board of directors or chief agent may be particularly interested in seeing the modelled impact in the analysis. The AA would consider actions that could be taken by the Canadian regulator(s) as well as by regulators in foreign jurisdictions. Such regulatory action and associated management response would consider the local assessment of solvency regardless of the insurer's worldwide solvency position as measured by Canadian regulatory standards. If the impact of potential regulatory action has been modelled in a recent FCT or ORSA analysis, it may not be necessary to model the impact again in a current FCT. This would be reasonable if the AA believes the scenario results have not changed materially and the regulator response and impact would be consistent with the earlier work.

Similarly, the AA would inform management on potential rating agency actions and possible repercussions but would not necessarily model or calculate the financial impact of such actions, unless the AA thought it would be beneficial to include.

Any provisions related to relevant legislation associated with insurer insolvency would not be taken into consideration in the base and going concern scenarios.

It is recognized that actions considered routine by one insurer may not be considered routine by another. Actions that may be classified as routine are those the insurer considered to be a component of standard policies and procedures and remain within the range of accepted actions.

**Ripple effects**

A ripple effect is an event or incident that occurs when an adverse scenario triggers a change in one or more interdependent assumptions or risk factors and includes policyholder actions, management's routine actions, and regulatory actions. The following are examples:

- Post-event epidemic mortality following a catastrophic event. A change in mortality unrelated to the catastrophe would not be considered a ripple effect but would be considered under a separate risk category.
- Following a severe catastrophe event, the post-event information would not only affect the claims stemming directly from the catastrophe but also other claims occurring in the area in and surrounding the catastrophe.
- Steady and continued deterioration in mortality versus that assumed in valuation and/or new business pricing assumptions, which would likely result in a routine reprice in new business rates to reflect emerging experience.
- The management action response to deteriorating mortality or morbidity experience on

group insurance written on a one-year term-renewable basis, or deteriorating loss ratios in certain lines of P&C insurance, which may take the form of premium rate increases, tightening of underwriting, modification of benefit definitions, etc.

- Adjustments to assumptions used in the base scenario that may no longer be appropriate in the adverse scenario being tested.
- The insurer's expected management routine response to adversity.
- Regulatory actions, both by Canadian and foreign regulator(s), and especially under any adverse scenario where the insurer fails to meet the supervisory target capital requirement.
- Rating agency actions, in scenarios the AA thought it would be beneficial to include due to significant changes in capital or surplus.
- Likelihood of changes in planned capital injections or distributions.

**Corrective management actions**

Paragraphs 2520.29 and 2520.29.1 state:

> For each of the adverse scenarios that would result in a threat to satisfactory financial condition, the actuary would identify possible corrective management actions that would lessen the likelihood of that threat, or that would mitigate that threat, if it materialized.
>
> Consideration would also be given to the effectiveness of possible corrective management actions in a volatile or stressed environment.

Actions not considered by the insurer in the normal course of business and which require escalation to senior management or the board of directors beyond routine management actions and the normal course of such requests would be classified as corrective management actions.

While corrective management action(s) can be used in both going concern and solvency scenarios, for the solvency scenarios in particular, the AA would consider the insurer's ability to sufficiently control completion of the action in a volatile or stressed environment. The involvement of third parties in the management action could reduce the ability of the insurer to control such actions; however, the presence of existing policies and processes and/or successful completion of such actions in the past could provide the AA with a level of comfort that such actions are within the insurer's control and will provide the expected result. Examples of situations where the AA may consider whether the insurer has sufficient control over the management action(s) include:

- The ability to issue debt or preferred shares at a given price or volume.
- The ability to incorporate price adjustments given any action or inaction of its competitors and potential repercussions from policyholders.
- A parent company's ability to inject capital due to increased demands from other business units or a subsidiary's ability to remit amounts to a parent company.
- The ability to develop a hedging program where no capabilities currently exist.

**Integrated scenarios**

According to paragraph 2520.22 of the SOP:

The actuary would construct integrated scenarios by combining two or more risks factors whose combination gives rise to an adverse scenario.

An integrated scenario is a type of adverse scenario that results when two or more adverse scenarios are combined. The integrated scenarios could be a combination of low-probability scenarios, or low-probability scenarios combined with a higher-probability adverse scenario. The adverse scenarios to be combined may be based on correlated or uncorrelated risk factors but the resulting integrated scenario would remain plausible and would consider associated ripple effects. It is recommended that at least one integrated scenario be tested.

## 3. Modelling

Modelling is normally required to test the capital adequacy of the insurer.

**Basic requirements of the model**

Typically, the model reproduces key elements from the financial statements, such as:

- Balance sheet
  - Assets (investments, reinsurance recoverables, and other assets)
  - Liabilities (insurance contract liabilities, other liabilities, debt)
  - Retained earnings/surplus
- Income statement
  - Revenues/premium income
  - Policy benefits/claims
  - Expenses
  - Income taxes
  - Preferred share dividends
  - Investment income
- Applicable regulatory measure of capital adequacy
- Source of earnings

The model would be valid on an accounting basis. The AA would verify the validity of the model, specifically that:

Statement of income = cash flows + change in balance sheet items

Financial results would be consistent among the various parts of the model as well as from year to year. This would be true for major items such as invested assets, policy liabilities, and surplus.

The insurer may use more than one model depending on the lines of business and jurisdictions. The modelling capability needs to be sufficiently flexible to enable the AA to assess risks within each risk category.

**Model validation**

The validity of the model is typically tested with the base scenario. Unless extraordinary changes are occurring in the insurance environment or in the business written by the insurer, it is expected that there would be continuity from the actual financial results of the most recent year to the first projected year and subsequent years such as in the following components:

- Cash and invested assets;
- Policy liabilities;
- Surplus;
- Accounts payable;
- Accounts receivable;
- Deferred income tax amounts; and
- Major cash flow items.

When building a new model, a possible approach to check the validity of the model is to use as input the data prior to the most recent actual year and use the experience of the last year to set the parameters. The result from the model could then be compared to the actual results. If the results between actual and projected are found to be sufficiently close, the model may be acceptable. The AA would determine in advance acceptable differences in assets, liabilities, surplus, premium, investment income, and net income.

When updating an existing model, a retrospective check on validity may be made. Each year after the actual results have been determined, differences between actual and base scenario model results would be justified.

The model would also be reasonable for all adverse scenarios. Evaluating the difference between the results of two scenarios is a good way to assess the ability of the model to quantify changes in key results under different sets of assumptions. The AA would verify that the magnitude and direction of change in key elements of the model is consistent with the change in assumptions.

**Approach in determining adverse scenarios**

The approach used to determine adverse scenarios may be stochastic, deterministic, or a combination of the two.

- Stochastic: certain risks are ideally modelled stochastically, such as those related to capital markets and those where the statistical loss distribution may be inferred and percentiles for results readily determined.
- Deterministic: the adverse scenarios are selected judgmentally by the AA, based on considerations such as variability in historical results or credibility of data.
- Combination: certain risks may be modelled stochastically and the results then used to derive a deterministic scenario that reproduces the desired stochastic results. The deterministic scenario would then be used as the adverse scenario for further analysis.

Examples of risks that are usually modelled stochastically include the following:

- Segregated fund—see the research paper *Use of Stochastic Techniques to Value Actuarial Liabilities under Canadian GAAP* (August 2001).
- Exposure to catastrophe estimated from catastrophe modelling software.

**Modelling of ripple effects**

The model would allow for the quantification of ripple effects of adverse scenarios. There are two possible approaches to generate the ripple effects:

- Automatically generated by the model.
- Manually created by the AA by modifying the appropriate assumptions.

For example, for a P&C insurer, the model could be built such that reinsurance rates will automatically increase in the year following a catastrophe – alternatively, the AA may manually modify the relevant parameters. For a life insurer, increases in new money interest rates may provide an incentive for some policyholders to lapse products that do not adjust, or slowly adjust, policy elements to changes in interest rates. The change in lapse rate could be modelled automatically based on changes in interest rates, or the AA could make the adjustment manually.

**Organizational considerations**

The AA would make an investigation of the insurer's financial condition. Although the modelling may be done by line of business, business unit, or geographical area, in order for the AA to report on the financial condition of the insurer, for regulatory reporting, the model results would be aggregated at the legal entity level.

Some assumptions are normally established at a high level, as they would be applied throughout the model. The following are possible examples:

- Economic parameters – interest rate levels, inflation, capital appreciation, and unemployment levels.
- Demographic parameters – overall trend in mortality or morbidity for a life insurer.

It is expected that the assumptions underlying economic and demographic parameters be consistent within each scenario and between scenarios (unless being specifically tested by the scenario).

It may be helpful to do modelling at the levels where management decisions will be taken (e.g., business units, geographical areas, product lines). For life insurers, it may also be informative to examine changes to the sources of earnings. It is desirable that the model have the ability to focus on a particular line of business, division of the company, fund, or territory. Since it is likely that models constructed for FCT purposes will also be used for corporate planning, the model would be sufficiently flexible to reflect any reasonable changes in insurer operations that management may want to test with additional scenarios.

The objective in designing the structure of the model is to facilitate the projection of the insurer's operations under a number of different scenarios. The insurer will have its own legal structure, and, within that, a management structure around which it will plan and monitor its financial results. In organizing the model, it is necessary to reflect this structure and determine where constraints apply and at which level within the hierarchical structure of the model parameters are best set.

In designing the structure for the model, the size and complexity of the organization will dominate.

At a corporate level, capital infusions, shareholder dividend payments, income taxes, required surplus, investment of surplus, and corporate expenses, such as head office lease and overhead costs, would be modelled. In a single-product-line insurer, these may be combined with the product projection.

In the more complex organization, while similar issues arise as in the single-product-line insurer, the need to segment the model arises. This may be driven by size, or certain products may be more efficiently modelled using different tools or techniques. Alternatively, there may be a desire to analyze specific units separately.

To derive model segments, the AA may consider the following:

- **Management** – this usually reflects the management structure. The business is subdivided into units and cost structures and management reports have been developed around them. Existing plans are assembled and decision-making is centered on these units. These units will combine products and possibly investment units. Subsidiaries and foreign operations would fall into this category.
- **Product** – this is usually the smallest subdivision of business considered. For life insurers, cash flow projections are usually already available, and the model may be built using these as the foundation. For P&C insurers, products with similar characteristics may be grouped together.
- **Investment** – usually investment segments are defined based on asset categories. Investment income allocation follows the investment structure. This method of subdivision would combine a number of similar assets for investment purposes.

It may be desirable to have further breakdowns within a segment to take into consideration different investment strategies or instruments that are exposed to distinctly different risks. These will require at least separate parameters and may need different modelling techniques or valuation methods.

The interrelationship of insurance and investment cash flows feeding the asset model is critical. Cash available needs to be established before investment decisions can be implemented.

For P&C insurers, the modelling of investment may follow the insurer's investment strategy rather than be product specific.

It may be desirable that calculation of taxes and required surplus be done at a divisional level of the model on a stand-alone basis. However, when results are consolidated, these will have to be redone on a consolidated basis. This implies that such data as necessary would be transferred to the corporate model to facilitate these calculations.

## 4. Reporting

The FCT report enables the AA to communicate the current and expected future financial position of the insurer. Significant investment in time and effort are required to develop the projection and analysis. The outcome of this investment is the report and the discussion, analysis, and management actions captured within. An interpretative report is more useful than a purely quantitative report.

The primary purpose of the report is to communicate the significant risks to which the insurer is exposed and possible actions that could be taken to mitigate those risks. The audience for this

report is the board of directors or an appropriate committee of the board (audit committee, risk committee, etc.) if they so delegate, as well as the regulator. In the case of a Canadian branch of a foreign insurer, the audience is the chief agent for Canada.

It is recommended that the FCT report would include a minimum of three scenarios including at least one going concern scenario and two solvency scenarios. The AA would provide rationale in the FCT report if less than three scenarios are included. It is also recommended that the actuary not concentrate the analysis on only one risk category for all the scenarios.

The actuary would discuss the report with senior management. The AA's challenge is to provide pertinent information in a comprehensible fashion to individuals with different backgrounds and qualifications. The report would be in writing, but an additional oral report that permits questions and discussions is expected. The report would need to consider the timing of other reporting such as ORSA to ensure consistent conclusions.

It may be useful to prepare a supplementary analysis for discussions with management. Any such analysis would contain consistent findings with the report.

The AA may prepare a single report independently on the FCT or, if deemed appropriate, a consolidated report with the ORSA analysis. The level of integration of the FCT and ORSA is a decision for the insurer to make. If the insurer chooses to maintain separate FCT and ORSA reports, the FCT would be consistent with internal target ratio(s) from the most recent ORSA report. A consolidated report would include the AA's independent FCT opinion. Development of a consolidated report would consider the insurer's size and its complexity of businesses as well as the impact of significant change in accounting and capital regimes.

Considerations supporting integration of FCT and ORSA include but are not limited to:

- ORSA-defined internal target ratio(s) which is a key component in the development of the AA's opinion. Should internal target ratio(s) evolve over the duration of the projection, for example due to significant growth and expansion in the insurer, it would be appropriate to assume internal targets that differ from those provided in ORSA. The actuary would provide justification for an internal target ratio that is different from the one provided in ORSA.
- ORSA's usefulness in assessing the going concern nature of adverse scenarios.
- Efficiencies such as:
    - Consistent timing;
    - General reporting needs such as collection of data, analysis, management discussions, production of reports, internal and external party reviews of reports; and
    - Overlapping requirements such as comprehensive stress scenario testing.
- A comprehensive view of both regulatory and own capital requirements that can better inform decision-making and management action.

Integration may encounter challenges that include but are not limited to:

- Oversight for FCT lies with the AA whereas for ORSA it is the board and senior management.
- FCT follows a prescribed regulatory basis while ORSA reflects own models and assumptions.

The differences in bases of calculation may make efficient integration of models and processes difficult.

- Areas of the organization responsible for FCT may differ from those coordinating ORSA, increasing the cost of coordination and change management.

The actuary would apply judgment to the insurer's circumstances on how to integrate the FCT and ORSA reports to reduce redundancy, ensure metrics are complementary and the report comprehensive. Commonalities may be applicable to both an FCT-only report and a consolidated report with ORSA:

- When there are a number of related legal entities in a group, consideration to the number of reports is needed. There are circumstances where a single FCT report covering multiple related legal entities may be appropriate. In order for this to be the case, the following conditions would generally be met:
    1. There is a common audience (or significant overlap) for all legal entities involved.
    2. The regulator(s) that supervise(s) the various legal entities agree(s) that a single consolidated report is acceptable or required.
    3. The FCT report includes the consolidated results, but also includes relevant results at the legal entity level.
- The report would include the actuary's FCT opinion overall and for each legal entity. The Standards of Practice and the regulator(s) require a signed opinion on the insurer's financial condition.

Paragraph 2520.09 of the SOP states:

> The insurer's financial condition would be satisfactory if throughout the forecast period,
>
> - Under the solvency scenarios, the statement value of the insurer's assets is greater than the statement value of its liabilities;
> - Under going concern scenarios, the insurer meets the regulatory minimum capital ratio(s); and
> - Under the base scenario, the insurer meets its internal target capital ratio(s) as determined by the ORSA.

The opinion is considered satisfactory even if corrective management actions under control of the insurer, as detailed in the FCT report, are recommended in order to meet any threshold. However, disclosure of the corrective management action(s) needed to maintain satisfactory financial condition of the insurer would be required. A not satisfactory opinion follows if any of the FCT thresholds are not met, even with corrective management actions in control of the insurer, or if thresholds are met with corrective management action under control of the insurer but the actuary is not comfortable with the corrective management actions taken.

The AA would consult the capital guidelines and rules of the regulator(s) to assess when and what type of intervention may be initiated if the financial condition of the insurer is not satisfactory.

The report would identify any and all transfers assumed to occur between legal entities, including

any risk-sharing agreements between legal entities or between a legal entity and a parent company, dividends to parent companies, capital infusions into legal entities, etc., whether in the base scenario or in the adverse scenarios. If a given legal entity requires a capital infusion in any of the scenarios, the report would include discussion on the likelihood of such infusions actually being made.

The report need not include any commentary on the development and/or validity of the regulatory capital formula used. In most cases it will suffice to disclose the following:

- The applicable federal and/or provincial regulatory formula(s).
- For insurers subject to target capital requirements under multiple jurisdictions, the rationale for using the selected formula.
- The target requirement used in the projections and the rationale.

The report and any discussion materials presented would reflect what is important to the insurer's board of directors or chief agent. The following is an illustrative outline of possible elements of a comprehensive FCT report. Suggestions to integrate with ORSA are also included. A consolidated report would include the guidance from OSFI Guideline E-19 or from AMF Capital Management Guideline.

*1. Executive summary*

The executive summary provides a high-level overview of the results of the FCT analysis, including the following:

- Summary of the results of the base and selected adverse scenario.
- Recommendations for management to mitigate or eliminate risk.
- Assessment of the events since the previous FCT report was submitted.
- Commentary on management's action in response to the recommendations in the previous year's FCT report, if appropriate.
- Other significant findings.

If a consolidated report with ORSA is developed, the following would also be included:

- Commentary on consistency of results between FCT and ORSA and possible actions with ORSA.
- Highlights of the ORSA results and internal targets.

*2. FCT opinion*

The AA would include a signed opinion on the future financial condition of the insurer. The opinion would reflect the particular circumstances of the insurer. The opinion is required in both an FCT-only report and a consolidated report with ORSA. A decision grid is provided below to highlight the requirements for each type of opinion:

| Scenario | Threshold | Is the threshold test under the scenario passed? | | |
|---|---|---|---|---|
| Base | Insurer's regulatory capital ratio(s) >= Internal target ratio(s) as determined by the ORSA | Yes (with or without ripple effects) | Yes (with realistic plan to pass ratio) | No |
| Going Concern | Insurer's regulatory capital ratio(s) >= Regulatory minimum capital ratio(s) | | Yes (with corrective action and actuary is comfortable) | No OR Yes (with corrective action but actuary is not comfortable) |
| Solvency | Statement value of the insurer's assets > Statement value of its liabilities | | Yes (with corrective action under control of insurer and actuary is comfortable) | No OR Yes (with corrective action under control of insurer and actuary is not comfortable) |
| | | ↓ | ↓ | ↓ |
| **Opinion** | | **Satisfactory Opinion** | **Satisfactory, subject to:** | **Not Satisfactory** |

*3. Introduction*

The introduction provides a forum to inform the user about the purpose and basis for the FCT report, consisting of the following:

- Oversight role of FCT and the purpose and scope of the report.

If a consolidated report with ORSA is developed, the following would also be included:

- Oversight role of ORSA and the purpose and scope of this component of the report.

*4. Results*

The AA would provide results of the testing performed:

- Summary of the FCT base and selected adverse scenario results.

If a consolidated report with ORSA is developed, the following would also be included:

- Discussion of the ORSA base and selected adverse scenario results.

More detailed discussion of the scenarios and the associated results would be provided in sections 7 and 8 below.

*5. Capital management and adequacy measurement*

The AA would explain the nature of the test used to measure the financial condition of the insurer, including the following:

- Definition of satisfactory financial condition used in FCT.
- Definition of minimum capital ratio requirements.
- Disclosure of the internal target ratio(s) as determined by ORSA and if they change over the projection period, the revised target ratio(s).
- Materiality standard.

*6. Background discussion*

This section would provide an overview of the insurer and the economic environment during the forecast period, including such things as the following:

- Summary of the nature of the insurer's business, products, and target markets.
- Review of recent and current financial position.
- Discussion of any key events or initiatives affecting the insurer in the recent past and any associated expected future developments.
- Description of economic assumptions.
- Discussion of the current and expected market condition.
- Discussion of prior year's FCT results, recommendations, and corrective management actions, if appropriate.

*7. Base scenario*

A clear description of the base scenario used in the FCT analysis would include the following:

- Description of the model or process used to project the base scenario.
- Description of main assumptions.
- Description of the internal target(s).
- Discussion of consistency of the base scenario with the insurer's business plan.
- Description of capital plans, especially any capital injections or strategic initiatives.
- Description of any ripple effects (including, but not limited to, routine management actions) reflected in the scenario.
- Discussion of key financial results, including key income statement and balance sheet items, and capital test results. A desirable approach would be to display the results for each year in the projection.

*8. Adverse scenarios*

This section would provide detailed descriptions of the selected scenarios posing the greatest risk to the insurer as well as any modelled scenario for which the insurer falls below, or comes close to, the defined thresholds. An overview describing the process used to identify the scenarios would be useful. For each adverse scenario, the following items would be included where applicable:

- Description of the risk being tested, key assumptions used, why the risk is significant to the insurer, and how this was determined.
- Comparison to prior year's FCT, and consistency of the selected scenarios with the prior year's results.
- Description of stress-testing results on an FCT basis.
- Description of key financial results and the change from the base scenario.
- Description of management actions that may be taken including reasons for such inclusion.
- Description of any ripple effects (including, but not limited to, routine management actions) reflected in the scenario.
- Description of any changes in the capital injections or distributions from those assumed in

the base scenario, and results with and without these capital changes.

- Clear reporting of results with and without the impact of corrective management actions to aid the audience in appreciating the effectiveness, practicality, and adequacy of the risk mitigating strategy.
- Discussion of possible regulatory actions, whether Canadian or from foreign jurisdictions, and repercussions if the scenario results fall below the target capital level, in the absence of any change in the base scenario capital injections, capital distributions, or other corrective management actions.
- Discussion of possible reactions of rating agencies and repercussions, when applicable, if the insurer's capital is severely strained.
- Discussion of changes in the adverse scenarios selected compared to the prior report's selection.
- Discussion on whether additional scenarios other than those reported in ORSA were used and the reasoning behind those additional scenarios.

If a consolidated report with ORSA is developed, the following would also be included:

- Description of ORSA stress-testing results.
- All of the above, as appropriate on an ORSA basis.

*9. Conclusions and recommendations*

Overall conclusions from the FCT analysis would be presented, including a brief description and summary of the results of the base and selected adverse scenarios and highlights of the most significant risks to capital adequacy and threats to satisfactory financial condition. Any findings leading to follow-up actions would be discussed. It may also be appropriate, and consistent with best practices, to make one or more recommendations, particularly with respect to corrective management actions that are intended to better manage or mitigate risk exposures.

*10. Appendices*

The primary purpose of the FCT report is to inform the insurer's board of directors or chief agent, and management of potential threats to future financial conditions and possible actions that may mitigate those threats, so a qualitative report is best to achieve this end.

However, it would be desirable for the AA to include some detailed financial results from the application of the FCT model. Typically, the model creates key elements and pages from the financial statements and copies of such exhibits for the base scenario and each of the selected adverse scenarios for the forecast period allow users to review the FCT results in more detail.

In a consolidated report with ORSA, the appendix would contain the methods and assumptions of own risk capital assessed. It could also include an overview of an insurer's enterprise risk management framework.

## Appendix A – Discussion and analysis of life insurer risk categories

This appendix outlines major risk categories that would be considered for life insurers and possible adverse trends. Each risk category section provides guidance about ripple effects, with possible corrective management actions listed where relevant.

The actuary would assess various risk categories and identify those that are relevant to their circumstances, including, but not limited to:

- Mortality;
- Morbidity;
- Persistency and lapse;
- Market (includes interest rate, equity, real estate, and currency);
- Inflation;
- Credit;
- Reinsurance;
- New business;
- Expenses;
- Government and political issues;
- Off-balance-sheet items; and
- Related companies.

Recent industry and insurer historical experience and the outlook for the future could be considered in determining a range of possible future experience. The AA may want to look at historical data such as CIA or other economic statistical data as a guide to help determine the possible deterioration of the risk.

The AA may also consider systemic risk as a cause of some of the other risks. As an example, the failure or downgrading of one or more significant insurers in the market could result in marketing and/or reputational risk for the other insurers. The AA may also consider liquidity and operational risks, likely as ripple effects associated with other adverse scenarios.

Liquidity is the availability of funds, or assurance that funds will be available, to honour cash outflow commitments (both on- and off-balance sheet) as they fall due. Liquidity risk is the inability to meet financial commitments as they fall due, through ongoing cash flow or asset sales at fair market value. Under some adverse scenarios, cash flow results may fall outside the targets set in a liquidity risk management policy, in which case examining ripple effects and possible management responses may be beneficial.

The AA may wish to consider operational risks, although the quantitative measurement of operational risk is still in its infancy and investigations may be more qualitative in nature. Systems and internal control procedures that may function well under normal day-to-day operations may begin to break down under adverse scenarios developed as part of FCT or ORSA. As well, business continuity plans may not consider scenarios that are as adverse as those developed as part of the

FCT analysis. Other sources of information that may be useful in examining operational risk might be rating agencies (e.g., new product risk) and the Society of Actuaries.

If a life insurer writes P&C business and the P&C business represents a material risk for the insurer, the AA would consider all risks covered in the P&C section of this educational note. If the P&C risk is not considered material by the AA, the AA would provide an explanation as to why it is not considered material. This is especially the case for some chartered life insurance companies operating in Québec.

Finally, the *Dynamic Financial Condition Analysis Handbook* of the Society of Actuaries is a good supplemental reference for risk areas and adverse scenarios that may be relevant for a given insurer, beyond those covered here.

**1. Mortality risk**

Annuity and insurance contracts tend to react very differently to adverse scenarios, so the testing of mortality for those lines of business would be done separately.

For insurance business, adverse mortality may arise from a variety of causes, including:

- An absolute increase in mortality rates, likely for a specific period of years and arising from an epidemic or other catastrophe.
- A steady and continued deterioration in mortality, arising from anti-selective lapse experience as new and more competitive products are offered, and also due to a weakening in underwriting standards.
- A steady and continued deterioration in mortality versus that assumed in valuation and/or new business pricing assumptions, which may include mortality improvement assumptions that are not fully realized.
- A misestimation of expected experience due to a lack of credible experience data.
- For death-supported insurance policies (i.e., policies where a decrease in mortality rates increases policy liabilities), a steady and continued decrease in mortality rates, arising from changes in medical treatments and/or changes in policyholder lifestyles, at a different rate than assumed.

For annuity business, adverse mortality may arise from a variety of causes, including:

- A steady and continued decrease in mortality rates, arising from improvement in medical treatments and/or changes in annuitant lifestyles, at a faster pace than that assumed.
- A misestimation of expected experience due to a lack of complete experience data.

The AA would consider whether such adverse mortality will be temporary or permanent in nature. Where appropriate, the impact would be reflected through a recalculation of policy liabilities.

The AA would consider possible ripple effects such as changes in sales levels and/or persistency following any pricing or benefit adjustments.

Possible management actions could include the following:

- For adjustable products, changing premiums and/or benefits (delay before management actions, partial adjustment for the adverse mortality experience).

- Adjusting the price of new business.
- Seeking reinsurance solutions.

**2. Morbidity risk**

Adverse morbidity includes the following:

- Increases in incidence rates for disability, medical, dental, critical illness, and other coverage; and
- Decreases in the rate of claim termination.

These may arise from a variety of causes, some of which include the following:

- A prolonged high-unemployment recessionary environment leading to both sharply increased incidence rates and low claim termination rates for disability.
- An increase in incidence rates without increasing death rates (for example, in the case of non-life-threatening epidemic or accident rates) or increased rates of diagnosis of critical illness as a result of sensitive diagnostic technologies.
- Improved treatment for diseases that decrease associated death rates.
- Court rulings that limit the insurer's ability to adjudicate claims.
- Retrenchment of government social security programs.
- Escalation in dental and medical costs.
- Misestimation of expected experience due to a lack of credible experience data.

The AA would consider possible ripple effects, such as the following:

- Constraints to rate increases as the industry reacts slowly in implementing renewal rate increases.
- Rate guarantees that limit or delay required rate increases.
- Increases in anti-selective lapses that dampen or nullify the effect of rate increases.
- Adverse publicity/reputation damage arising from claim or underwriting practices, leading to decreased sales of new business.

Possible management actions could include items such as the following:

- Increasing rates; and
- More active claims management.

**3. Persistency and lapse risk**

Generally, persistency risk exists when cash value does not equal the policy liability. When cash value is higher, the risk is that lapses will exceed those assumed. When the policy liability is higher, the risk is that lapses will be less than those assumed. In examining the persistency and lapse risks, it is prudent to assume that both these adversities may happen concurrently. Generally, the appropriate level of lapses would be assessed for each product line.

Causes of adverse persistency and lapse include the following:

- Premium changes, including amount and payment pattern.
- Dividend scale changes.
- Changes in distribution system.
- A new product introduced to the market by a competitor.
- Changes in underwriting and/or qualification criteria for preferred/select classes.
- Changes in premium rates in the market.
- A lack of confidence in the insurer that may be caused by a sudden downgrade by external rating agencies, combined with extensive publicity.
- A misestimation of expected experience due to a lack of credible experience data.

Ripple effects for persistency and lapse risk could include the following:

- Worsened mortality or morbidity, which may be caused by anti-selection.
- Mismatch of asset and liability cash flows.
- Increased unit expenses.
- Worsened liquidity risk (for example, a "run on the bank" situation).
- Reduction in insurer's new business while, at the same time, the insurer could not proportionately reduce its expenses.
- Inability to borrow or renew any external capital or debt.
- Changes in the expected mix of business.

**4. Market and credit risk**

In consideration of market and credit risks, the AA may want to review available historical data. Adverse scenarios may arise from a variety of sources, including the following:

- Changes in future rates of interest.
- Increases in losses from defaults on debt securities.
- Poor returns and/or declines in value of equities or real estate.
- Counterparty defaults on derivatives.
- Loss or significant decline of value for other major asset categories.
- Concentration risks, including geography (e.g., impact of natural disasters), asset class, industrial sector, subsidiaries, individuals.
- Poor returns and/or declines in the value of a subsidiary.
- Fluctuations in currency values.
- Market value deterioration in segregated fund assets.

The AA would test the impact of potential adverse scenarios on liabilities and surplus across all lines of business in aggregate.

When there is a mismatch between the cash flow pattern of assets and liabilities, there will be a need to reinvest positive cash flows, and to borrow or liquidate assets to fund negative cash flows. Future rates of interest can vary substantially and can adversely affect surplus. As a result, the value of derivatives will also be impacted. Where they are used as hedges, they will help mitigate adverse impacts.

In assessing the impact of changes in interest rates, the AA would consider both the current mismatch position as well as any possible mismatch in the future. This will depend on the maximum position allowed by the insurer's investment policy and the most aggressive position that has been taken in the past by the insurer.

Parallel and non-parallel shifts in the yield curve, both on a sudden and a gradual basis, would be considered. Stochastic modelling as well as deterministic scenarios could be considered. The AA could also examine additional deterministic scenarios or more extreme tail results under stochastic modelling than are already reflected in the development of adverse scenarios.

Changes in future interest rates will affect not only future rates of reinvestment and market values, but also the pattern of the cash flows. For example, this can occur with asset-backed securities, callable bonds, and on policies with cash surrender values.

Future interest rates may also affect the spread that can be achieved on both new business and the fixed interest rate business where rate resets are being made.

Sustained low levels of interest rates could also affect the insurer's ability to support minimum long-term guarantees embedded in both insurance and annuity products.

Future interest rate levels will also affect the amount and mix of new business for guaranteed fund and segregated fund products. Interest rate levels will also affect the number of surrenders, transfers between funds, and shifts between portfolio average and new money products. The movement and financial exposure will depend on surrender charges and market value adjustments embedded in these products. Particular consideration would be given to assessing the effect of a "run-on-the-bank" scenario.

For participating insurance, universal life, and adjustable premium business, considerations would include the following:

- The impact on the proportion of fixed income assets backing participating business and the duration of those assets, and that of key competitors.
- Dividend actions of competitors.
- The ability and willingness of management to maintain or change dividend scales.
- Reviewing premiums and charges of universal life products.
- Related policyholder actions such as surrender levels and potential litigation.
- The impact on the level of new sales.

For segregated funds, drops in market value may affect the payment of benefits (or the likelihood of future payment of benefits) relating to the existence of guarantees of minimum segregated fund performance. Considerations would include the following:

- The extent of minimum performance guarantees provided on death or maturity.

- The extent of hedging operations or reinsurance to mitigate the risk.
- The existence of product features such as resets that will affect the risk.
- The existence of volatile funds, fund-switching privileges, guarantees on a "per policy" basis, or high management expense ratios (MERs).

The AA may consider an integrated scenario in which a combination of the following events occurs:

- A drop in the market value of debt securities resulting from an increase in the yield curve.
- A decline in equities caused by a significant drop in the S&P/TSX index or any other significant stocks index.
- A significant decline in the value of real estate.
- A significant decline in the value of the largest subsidiary.

The AA would consider how to reflect the effect of such events in determining policy liabilities and also consider expected pricing actions. The ripple effects could vary depending on whether the results are insurer-specific or industry-wide. The following are possible ripple effects:

- Exposed risk positions as a result of counterparty default.
- A ratings downgrade of the insurer that leads to decreased sales and increased surrenders.
- Liquidity issues or forced asset liquidation risk issues caused by large sustained credit-related losses either through defaults or severe asset downgrades.
- Counterparty defaults on derivatives.
- Decreased policy owner dividends that could lead to higher surrenders.
- Increased disability claims frequency and severity due to deterioration of economic conditions.

Possible management actions may include the following:

- A shift in the investment strategy;
- Dynamic hedging programs; and
- A review of premium rates.

**5. Inflation risk**

Inflation can pose a significant risk to an insurer in many ways: a sustained increase in disability, pension or other benefits that are linked to the Consumer Price Index or similar price indices; a sudden increase in drugs and health care costs covered by health insurance policies; and an increase in absolute expenses and in-unit operating costs. Inflation rates and market interest rates tend to be correlated. A high-inflation scenario would normally be assumed to accompany a high-interest scenario, but consideration would be made to a scenario where this does not occur.

The AA would consider possible ripple effects, such as the following:

- A decrease in real rates of return.
- A rapid and sustained increase in market interest rates.

- Constraints to rate increases as the industry reacts slowly in implementing renewal rate increases.
- Rate guarantees that limit or delay required rate increases.
- Decrease in the rates of disability claim termination when inflation is higher than wage increases or when inflation occurs during a recession or a period of rising unemployment.

Possible management actions may include the following:

- Implementing rate increases, where possible;
- Reviewing the extent of the coverage and cost containment features;
- Reviewing the asset mix to increase real rates of return; and
- Reviewing policies, procedures, and staffing to control costs.

**6. Reinsurance risk**

Reinsurance risk arises from a reinsurer's failure to meet its obligations, or from a change in market conditions causing an increase in rates, inadequate limits, or otherwise inadequate or unaffordable coverage. In this context, the term reinsurer is intended to include both reinsurers, if the entity is a primary insurer, and retrocessionaires, if the entity is itself a reinsurer.

Reinsurance terms on individual life cessions may be guaranteed for the life of the underlying policy. The primary risks for a ceding entity are outlined below.

- **Insolvency of a reinsurer –** the ceding entity's exposure in the case where its principal reinsurer(s) become(s) insolvent would reflect an assumed realization percentage of assets to liabilities of the failed reinsurer, and any different treatment of various types of amounts owing from the reinsurer to the direct writer. The impact of a reinsurer's insolvency may be mitigated by the following provisions:
    - The right of offset of amounts owing under all treaties between the companies.
    - The preferred position insurers will have relative to other creditors.
    - The right of recapture in the event of the reinsurer's failure.
    - Access to amounts on deposit or assets in trust (or other similar arrangements) with the insurer, or letters of credit in respect of an unregistered reinsurer.

  It would normally be appropriate to assume that the business previously ceded to the insolvent reinsurer could be successfully reinsured elsewhere, but possibly on less favourable terms. However, there may be certain unique features regarding the business involved that would make securing such replacement difficult.
- **Increases in reinsurance rates –** where a reinsurer takes market-wide action impacting all of its insurers operating in similar markets, such action would not necessarily pose competitive issues, as these insurers would all be faced with an increase in reinsurance rates, possibly requiring repricing in a large segment of the marketplace. However, market-wide increases in rates may further adversely impact a particular insurer if it is operating with lower capital margins. In addition, where a reinsurer's action is targeted to one specific insurer because of poor experience, necessary repricing could affect the level of sales.

- **Reduction in reinsurance capacity available for the financing of new business –** this could result in an increase in reinsurance costs and/or constraints on the amount of new business growth of the insurer.
- **Disputes over policy conditions –** the AA could consider a dispute over reinsurance policy conditions which results in a principal reinsurer denying coverage for a significant class of business or category of claims; for example, terrorism exclusions.

**7. New business risk**

One of the uncertainties facing an insurer is the volume of new business it will be able to write in the future. Volumes significantly different from those assumed can result in a capital position quite different from that expected. It may be equally important to examine both higher-than-expected and lower-than-expected levels of new business production. Even in the case where total business volumes have been estimated accurately, new business risk may still be present if the mix of business sold is different from that expected.

There are several events that could lead to a significant reduction in premium volume written by an insurer, including the following:

- A financial rating downgrade of the insurer or an affiliated company (particularly the parent), or some other event (including cyber or operational risks) similarly damaging to the insurer's reputation.
- Entry of a new and strong competitor into an area where competition was previously weak, and/or increased competitiveness in the market due to higher use of advertising by competitors.
- Loss of a key distributor or even an entire distribution channel previously responsible for the production of a significant portion of an insurer's business.
- Loss of a key client, such as a large group client representing a significant portion of an insurer's group portfolio.

The most significant impact of lower-than-expected sales would be that the insurer is not able to cover its expenses, particularly when there is a large element of overhead and fixed expenses associated with marketing, underwriting, policy issue, and sales functions.

Ripple effects could include the following:

- Higher lapse rates on existing business.
- Poorer claims experience on the remaining business.
- Poorer coverage of maintenance expenses (resulting from both lower current sales as well as higher lapses on existing business).
- Ripple effects on associated lines of business to the affected line of business (for example, distribution channels primarily involved in one line of business may contribute to significant future sales in another line).

Possible management actions could include items such as the following:

- Reviewing bonuses paid to agents and brokers.

- Diversification into more than one line of business.
- Control over non-variable expense levels.
- Maintaining contingency action plans to be implemented in case one of these events occurs.

When the insurer has written a greater amount of new business sales than expected, this could lead to severe capital strain for the insurer. Events that could lead to a significant increase in premium volumes written by an insurer include the following:

- Unexpected success in a new product area or in beating previously stronger competition.
- Exit of a competitor from a product or market.
- Rate increase implemented by other companies leading to a fire sale for products still in the market at lower rates.
- Tightening of product features by other companies in the market.
- Change in reinsurance arrangements leading to a higher-than-expected retention on new business.

Ripple effects could include the following:

- Problems with management control over policy issue, underwriting, field expenses, financial reporting, etc., due to rapid growth (leading to future problems in claims and expenses as competition eventually catches up and volume levels return to normal).
- Future expected lapses, mortality, or morbidity could be different if sales are driven by old-generation products.

Possible management actions would include the following:

- Putting capital-raising plans in place with a parent company or with external sources.
- Contingency plans to be able to handle the increased volumes of business.
- Reviewing rates and underwriting guidance.
- Reviewing the use of reinsurance to mitigate the need for additional capital.
- Withdrawing a product or a line of business.

Normally, the base scenario would incorporate the new business projections of the insurer's business plan and associated expense levels. Alternate scenarios would be heavily dependent on the specific insurer, varying in particular with the kind of market the insurer serves and the distribution channel employed to reach it. However, any alternate scenario would reflect not only the change in new business levels, but also the impact on expense coverage and any other possible ripple effects.

**8. Expense risk**

Expense assumptions are unique in that management has a greater level of influence here than on other assumptions. Even insurers who, historically, have aggressively managed expenses to budgeted targets may face major expense issues in some situations such as an unexpected variation in new business growth, litigation, or other developments. Insurers practising strict management of budgets to meet expense levels included in pricing may have different results from insurers that

manage budgets to other measures. The extent to which the insurer has demonstrated effective actions towards managing expenses in the past would be a consideration in how closely to relate expense levels under adverse scenarios to expenses in the base scenario.

Adverse expense scenarios and related ripple effects to which an insurer's financial condition may be sensitive include the following:

- **Inflation** – a severe inflationary environment may cause a rapid increase in absolute expenses and in unit costs. It is also possible to have future expense increases due to internal factors unrelated to future interest rates and inflation rates.
- **Technological obsolescence** – new technologies may develop that deliver significant cost, delivery, or service benefits for those who can achieve economies of scale. For companies that do not make use of new technologies, expenses may rise relative to the competition. Such a scenario would also include the sales and termination impacts of technological obsolescence.
- **Court-awarded damages/data security or recovery** – potential high costs can result from court-awarded damages to plaintiffs relating to such matters as market conduct or the costs related to data security and recovery due to a cyberattack or breach. Resulting ripple effects include damaged industry reputation, ratings downgrades, lower sales, and higher terminations.
- **Industry or guarantee fund assessments** – further industry failures can precipitate higher assessments to companies in the industry. Ripple effects from such failures can include damaged industry reputation, flight to quality, lower sales, and higher terminations.
- **Company structure** – holding-company expenses may be allocated to subsidiary companies based on historical or projected relative profits. This could lead to a major change in the level of expenses allocated to the insurer based on the performance of one of the other companies in the enterprise. Within a single insurer, methods of allocating overhead expenses to different business units may produce changing expense levels over time. In an enterprise that has several insurance companies or business units that provide services to one another, the impact of cross-billing would be considered.
- **Mergers and acquisitions, or assumptions of new business** – reductions in unit expenses after a merger, acquisition, or assumption of a new block of business may be delayed or lower than projected in the base scenario. Possible ripple effects could include:
    - Changes in product pricing;
    - Low sales; and
    - Higher lapses.

**9. Government and political issues risk**

When the government makes changes to its policies or regulations, the implementation of such changes usually takes a considerable amount of time. This gives an insurer time to analyze the impact and take appropriate actions, if necessary. However, some changes can occur in a very short period and cannot be foreseen. There may also be cases where changes are effective retroactively without any grandfathering provisions. In such cases, the adverse scenario may be modelled in the

first year if the scenario is plausible in that time period.

The AA would likely focus on changes that are being discussed or proposed by government entities. However, in some situations it may be beneficial to consider other changes, particularly for certain lines of business that have a greater sensitivity to political intervention, and if those lines of business are material to the insurer.

Examples of adverse events:

- An increase in premium tax rates.
- An increase in taxation rates for corporations (income tax or capital gains tax).
- A prolongation of temporary taxes.
- New restrictions on registered retirement savings plans or registered retirement income funds that would have a direct impact on the level of new business for those products.
- Entry of other financial institutions into the life insurance industry (e.g., due to revisions to the Bank Act) that affect the amount of new business and lower profit margins due to increased competition.
- Possible new restrictions on the investment practices of life insurance companies (e.g., a restriction on the use of derivative products for speculation or hedging).
- The introduction of a new or modified public health care policy, which could decrease new sales or in-force business (e.g., the introduction of pharmacare).
- A change in regulatory solvency standards that increase the capital requirements.
- A reduction in the government's need to borrow funds, which could affect the volume of government bonds available to the market.
- Political instability, which could lead to confiscation of assets, closure for new business, exchange controls, etc., particularly in foreign jurisdictions.
- Impact of cost shifting between public and private sectors or changes in coverage under public insurance plans.
- A change in law or regulation directly affecting an important product line (e.g., a change in tax law affecting the position of the policyholder, a change in capital or reserving requirements putting a particular type of product at a competitive disadvantage relative to products provided by other financial institutions or even other insurance providers, a restriction of information that may be used in underwriting).
- A change in legislation that restricts the use of some distribution channels.
- Benefits, premiums, or rate adjustments subject to regulation.

For a specific scenario, possible ripple effects may include the following:

- Increased litigation costs;
- Forced liquidation of assets due to cash flow strains;
- Increased regulatory monitoring;

- Increases in the policy liability; and
- Increases in reinsurance rates and/or non-availability of reinsurance of new business.

**10. Off-balance-sheet items risk**

There are numerous off-balance-sheet items that may place an insurer at risk. Often these items arise from new or evolving industry practices that, in future years, do get recognized on the balance sheet by the Chartered Professional Accountants of Canada (CPA Canada), the CIA, or regulators. The AA needs to be aware of emerging risks that may be relevant to the insurer during the forecast period and assess their potential threat to the insurer's solvency.

Discussed below are examples of common off-balance-sheet items and their related risks that may be relevant to the insurer:

- **Derivative instruments** – the risks associated with derivatives include market risk, default risk, management risk, and legal risk:
  - Market risk includes marketability risk and basis risk. Marketability risk is the risk of not being able to cancel or unwind one's contract when desired or at a favourable price. Basis risk is the risk that the derivative's price behaviour does not act as expected, undoing the intended hedging benefits. The price behaviour of the instruments can change adversely when market conditions change. Market risk is best evaluated on a security basis and on a portfolio basis since some risks may not net against each other.
  - Default (or credit) risk is the risk that a loss will be incurred due to a default in making the full payments when due, in accordance with the terms of the contract.
  - Management risk is the potential for incurring material, unexpected losses on derivatives due to inadequate management supervision and understanding, systems, controls, procedures, accounting, and reporting.
  - Legal risk is the risk that the derivative agreement is not binding as intended.
- **Contingent liabilities or losses** – there are a variety of contingent liabilities to which an insurer may be exposed, such as tax, litigation, etc. The AA would consider the financial impact of adverse outcomes.
- **Letters of credit and pledged assets** – the insurer may be exposed to the risk that a lending institution defaults on payment under, for example, a letter of credit, or there is a call on assets pledged.
- **Capital maintenance agreements** – an insurer could be exposed to capital maintenance agreements it must honour for its subsidiaries (e.g., if an insurer has to guarantee a certain capital level in a subsidiary).
- **Employee and senior management benefits and liabilities not listed on the balance sheet (e.g., pension plans, stock option plans)** – this carries the risk of increasing costs.

**11. Related companies risk**

The related companies risk is the risk that the life insurance company may run into financial difficulties as a result of its subsidiaries' or any other related entity's financial difficulties. The related companies risk may also arise from a decision made by the controlling company that may be

unfavourable to the affiliate. For an insurer, being a part of a financial organization can be a potential source of strength, but it can also pose risks, particularly as a result of contagion. This risk could be integrated easily into other risk categories as a ripple effect and/or corrective management action or be considered as a separate scenario.

Factors to be considered include, but are not limited to, the following:

- The impact on the insurer if financial support is no longer guaranteed by the parent, or the insurer is unable to access additional capital or is obliged to continue to repatriate funds.
- The effect on the insurer of an impaired parent or affiliate within the group (e.g., the impact on funding sources available, such as lines of credit, intra-group funding, or access to external capital).
- The effect on the insurer of the inability to sell or close in a timely manner a subsidiary that is in financial difficulty (e.g., where the subsidiary shares the same brand, systems, and other infrastructure as the insurer).
- The implicit support of group companies through the reallocation of group overheads towards the insurance entity.
- The pressure on the insurer to support other group members financially (e.g., capitalizing subs to meet their local supervisory target capital requirement).
- The pressure on the insurer to comply with group requirements rather than the firm's own strategy (e.g., with respect to investment mix).
- The effect on the insurer of a high degree of dependence on group resources (e.g., through intra-group outsourcing) to support the insurer's critical operations.
- The effect on the insurer of a downgrade in the rating of the group or of other reputational issues.

## Appendix B – Discussion and analysis of property and casualty insurer risk categories

This appendix outlines the major risk categories that would be considered by P&C insurers, and possible adverse trends. Each risk category section provides guidance about ripple effects, with possible management actions listed where relevant. The actuary would assess various risk categories and identify those that are relevant to their circumstances, including but not limited to, the following:

- Claims frequency and severity;
- Policy liabilities;
- Inflation;
- Premiums;
- Reinsurance;
- Investment;
- Government and political issues;
- Off-balance-sheet items; and
- Related companies.

Two risk categories not included above are expenses risk and operational risk. Scenarios arising due to expenses risk are not common for most P&C insurers but may be significant for an insurer that is just starting up or winding down operations. Operational risk is an evolving area and the AA may be obliged to consider scenarios such as a major shutdown of operations or loss of a key individual in the organization.

For each relevant risk category, the AA would assess the plausible adverse scenarios that are likely to significantly affect surplus or that may cause the insurer to fall below the threshold during the forecast period.

The AA may also consider systemic risk. As an example, the failure or downgrade of one or more significant insurers in the market could result in marketing and/or reputational risk for the other insurers. The AA may also consider liquidity risk, likely as ripple effects associated with other adverse scenarios.

Depending on the insurer's circumstances, the board of directors or chief agent and management may also be interested in various levels of not satisfactory condition, in which case further stress testing may be beneficial.

Once the relevant scenarios are tested, the AA would then select plausible adverse scenarios from those modelled showing the greatest surplus sensitivity for inclusion in the FCT report. Similarly, for any plausible modelled scenario that may trigger rating agency actions, the AA would discuss those with management.

If the P&C insurer manages life business and that life business represents a material risk for the insurer, the AA would consider all the risk categories covered in the life appendix of this educational note. If the AA does not consider the life risk important, an explanation would be provided

indicating why it is not considered material.

**1. Claim frequency and severity risk**

An insurer's financial condition may be sensitive to increases in claim costs (including loss adjustment expenses). Future claims costs and loss ratios can differ significantly from the base scenario due to the following:

- **Single catastrophic event –** consider natural disasters (e.g., earthquakes, windstorms, floods, and hail), human-made events (e.g., terrorism), or any other single event affecting multiple policyholders that could have a material impact.
- **Single large claim –** consider the effect if policies/accounts with the largest probable maximum loss or maximum exposed policy limits (if more appropriate) have a full loss event.
- **Multiple catastrophic events –** consider two or more events affecting multiple policyholders where the joint probability of the events is approximately equal to the probability of a single catastrophic event.
- **Multiple large claims –** select a size of claim that would be considered large by the insurer, generally smaller than the insurer's net retention. Using historical claims trended to current levels and adjusted for the insurer's current exposure, the AA would estimate the frequency and severity distribution of these claims. The cumulative distribution may be estimated using assumed distributions or simulation techniques. The cumulative distribution would be constructed for net and gross claims.
- **Other frequency and severity –** model the loss ratio or frequency and severity of claims. Since catastrophes, large claims, and adverse development are considered in other scenarios, the AA could remove unusual claims from the data prior to their analysis. It is generally recommended that the variability of the normal accident year or underwriting year loss ratio, or the combined frequency and severity distribution, be examined. The AA may assume a distribution of claims and determine the appropriate adverse scenario.
- **Social inflation –** social inflation refers to the claims inflation resulting from changes in the likelihood of claimants bringing suit, the size of awards, the standards of liability, or the attitudes of claimants towards settlement of their claims. A significant sustained increase in the rate of social inflation would tend to lead to increases in the ultimate number or severity of unpaid liability claims and increases in the number or severity of future liability claims (both those related to the runoff of the unearned premium and those related to future new and renewal business). It would not normally be linked to a change in market interest rates.

Possible ripple effects may include the following:

- Insolvency of one or more reinsurers accounting for a significant portion of the insurer's reinsurance coverage.
- Increases in the policy liabilities related to current reinsurance contracts that are swing-rated, have variable commission, or require reinstatements.
- Loss of reinsurance coverage for remainder of term.
- Increases in reinsurance rates or non-availability of reinsurance at the next renewal.

- Post-event inflation (i.e., a significant temporary increase in the cost of labour and materials) following a catastrophe resulting in increases to the ultimate cost of unpaid claims as well as future claims.
- Post-event inflation in regions not directly affected by the catastrophic event.
- Forced sale or liquidation of assets.
- Increased Property and Casualty Insurance Compensation Corporation (PACICC) assessments resulting from failure of other insurers.
- Rating agency downgrade.

Possible management actions may include the following:

- Reviewing reinsurance coverage, type, or contract terms at renewal.
- Implementing rate increases, where possible.
- Restricting writing in hazard-prone areas.
- Reviewing the target mix by line of business or jurisdiction.
- Reviewing the type of products offered, such as writing more subscription policies.
- Selling or reinvesting assets.

**2. Policy liabilities risk**

Policy liabilities are estimates of future amounts required to pay for claim liabilities and premium liabilities. For long-tail lines, estimates of the cost of future claims may depend upon the estimates of the unpaid claim liabilities. As such, underestimating the policy liabilities may have a concomitant effect on the estimates of future claims.

Where the underestimation of policy liabilities results from the occurrence of a catastrophe, this scenario would normally be covered under claim frequency and severity risk. Where the underestimation results from legislative change(s), this scenario would normally be covered under government and political issues risk.

Examples of adverse scenarios to which an insurer's financial condition may be sensitive include the following:

- **Selection of inadequate loss development factors,** especially for new products or lines subject to legislative changes for which long-term development patterns are not available.
- **Class actions and other mass torts,** effective retroactively.
- **Change in mix of business** where a shift to longer-tailed lines of business may result in adverse development if selected loss development patterns do not reflect the shift.
- **Claims paid faster than assumed** in the base scenario, especially if large claims are paid earlier.
- **Actual rate of return on investments supporting the liabilities significantly lower than assumed** in the base scenario.

Possible methods to determine the adverse scenario include the following:

- Modelling the loss development factors with a statistical distribution and estimating the unpaid claims with factors at the desired adverse scenario percentile.
- Analyzing the insurer's history of actual-to-expected development of unpaid claims. This would generally be done for all lines of business combined, although an analysis by lines of business may be appropriate for an insurer where the mix of business has changed significantly over the years. It may be appropriate to use industry data for a new insurer, or if the insurer has a significant volume in new lines of business. In estimating the adverse scenario, the AA may want to fit a distribution to the historical runoff data.

Stress testing may be useful to determine the magnitude of an understatement of unpaid claim liabilities or of an unanticipated large payment that would result in not satisfactory financial condition for the company.

Possible ripple effects may include the following:

- The effect on actuarial present value for scenarios affecting undiscounted policy liabilities.
- Increases in the policy liabilities related to current and past reinsurance contracts that are swing-rated, have variable commission, or require reinstatements.
- Increases in ultimate claim costs and claim expenses in connection with the runoff of the unearned premium for scenarios affecting claims liabilities.
- Increases in ultimate claim costs and claim expenses in connection with future new and renewal business.
- Forced sale or liquidation of assets.
- Rating agency downgrade.

Possible management actions may include the following:

- Settling claims faster by minimizing litigation or fast-tracking claims handling.
- Reviewing reserving and claim settlement guidelines.
- Implementing rate increases, where possible.
- Reviewing the target mix by line of business or jurisdiction.

**3. Inflation risk**

Claim costs and claim adjustment expenses are quite sensitive to inflation. Inflation in the insurance environment will generally be positively correlated with the general rate of inflation, as measured by the Consumer Price Index (CPI). There will, however, be changes in costs that will affect the insurance environment differently than the overall economy.

Claim costs may be affected by price increases extraneous to the insurance business. This excludes the effect of social inflation that is considered in risk category 1 (claim frequency and severity risk). Changes in inflation may be due to the following:

- **A significant, rapid, and sustained increase in the general rate of inflation –** in this scenario, inflation will lead to increases in the ultimate cost of settling claims (incurred and unpaid as well as future claims) as well as various related expenses. It would normally, but not always,

be linked to a rapid and sustained increase in market interest rates.

A scenario considering sustained inflation will tend to be based on a significant increase in trend over inflation projected in the base scenario. Ideally, the increase would be applied over the entire projection period. This would tend to be accompanied by an increase in market interest rate.

A possible method to determine an adequate level of increase in the inflation trend would be to look at historical changes in the CPI over three-year periods of time. The length of time considered would ideally be long enough to capture a large range of situations that can be applied to the projection period. The level of change in market interest rate would be based on the reasoning described in risk category 6 (investment risk).

- **A significant temporary increase in the cost of labour and materials following a catastrophe or other major event –** in this scenario, the ultimate cost of settling claims would increase following a catastrophe or other major industry event that did not directly affect the insurer. This scenario differs from the ripple effect for catastrophic event(s) in risk category 1 (claim frequency and severity risk) because the increased cost affects claims that were not the result of the event.
- **A severe recession in the economy –** in this scenario, economic conditions may lead to increases in the ultimate number of, and cost of, settling claims and loss adjustment expenses, for both current and future claims. This may be linked to a sustained increase in general inflation, unemployment level, or market interest rates.

Possible ripple effects may include the following:

- A rapid and sustained increase in market interest rates.
- Increase in operating expenses.
- Increase in reinsurance rates on current swing-rated contracts and on future contracts.

Possible management actions may include the following:

- Reviewing reinsurance coverage, type, or contract terms at renewal;
- Implementing rate increases, where possible;
- Reviewing the target mix by line of business or jurisdiction;
- Reviewing the type of products offered;
- Selling or reinvesting assets; and
- Adjusting the insurance to value or cost calculator.

**4. Premium risk**

An insurer's financial condition may be affected by differences between actual business volume, type, or mix, and the respective assumptions in the business plan.

There are several categories of events that could have considerable impact on the volume, type, mix, and profitability of business written by an insurer. Some of these events are related to the underwriting and marketing environment and can result in unexpected reductions or increases in

premium volume. Inadequate pricing may also trigger significant changes in the premium volume or mix of business and is likely to compound the effect of scenarios triggered by other events. Any significant change in premium volume resulting from government or political actions would be considered under risk category 7 (government and political issues risk).

Stress testing may be useful to determine the magnitude of premium volume that would result in a not satisfactory financial condition for the insurer. Consideration would be given to the assumptions in the base scenario, and vulnerability of the insurer to the selected event given its size, marketing plan, and strategies.

*Premium volume significantly lower than the base scenario*

The reduction from the planned premium volume can be the result of lost business, reduced or inadequate rate level for some market segments, and/or uncompetitive pricing in some market segments.

Some events resulting in a significant reduction in premium volume include the following:

- Entry of a new and strong competitor into a market.
- Increased competitiveness in a market.
- Loss of a key distributor or even an entire distribution channel.
- Loss of a key client.
- Action by any influential entity (consumers, distributors, rating agencies, etc.) that affects the insurer's reputation or growth negatively.
- Inability to implement planned premium rate increases.
- Non-competitive premium rates.

Possible ripple effects may include the following:

- An increase in loss ratio due to a soft market, inadequate pricing, or lost business that is relatively more profitable than the retained business.
- An increase in the fixed expense ratio.
- An increase for certain types of expenses (for example, more advertising costs to counter a very aggressive competitor).
- A shift in portfolio mix since the lost business could have a very different average premium or could be primarily from a specific market segment.
- An increase in reinsurance costs as a percentage of subject premium.
- Forced sale or liquidation of assets.

Possible management actions may include the following:

- Reducing personnel or slowing down hiring.
- Identifying other distributors for the insurer's product(s).
- Implementing rate changes, where possible.

- Changing reinsurance coverage, type, or contract terms at next renewal.
- Underwriting actions in markets subject to increased competition.
- Changing the target mix of business of future lines of business.
- Adjusting the investment portfolio to mitigate cash flow strains.

*Premium volume significantly higher than the base scenario*

An increase from the planned premium volume can be the result of unexpected new business or inadequate (i.e., too competitive) rate level for some market segments.

Some events resulting in a significant increase in premium volume include the following:

- Withdrawal or failure of major competitors from a market.
- Appointment of a key distributor.
- Unexpected new business from a large client.
- Any action by any influential entity (consumers, distributors, rating agencies, etc.) that affects the insurer's reputation or growth favourably.
- Unexpected success in a new product area, or against previously stronger competition.
- Premium rates set too low compared to the competition.

Possible ripple effects may include the following:

- A higher loss ratio on new business due to inadequate pricing.
- A shift in portfolio mix since the new business could have a much different average premium or could be primarily from a specific market segment.
- Higher expenses (hiring of employees, increased overtime, etc.) in the short term as well as in the long term.
- Increased PACICC and pool assessments.
- Increased reinsurance costs.

Possible management actions may include the following:

- Implementing rate changes, where possible.
- Underwriting actions (e.g., restrictions on new business, withdrawal) in unprofitable markets.
- Reviewing the distribution channels.
- Reducing certain types of expenses (for example, advertising costs).
- Using reinsurance to mitigate capital strain.

**5. Reinsurance risk**

An insurer's financial condition may be adversely affected by a reinsurer's failure to meet its obligations to the insurer, or from a change in market conditions causing an increase in reinsurance rates, inadequate reinsurance limits, or otherwise inadequate or unaffordable reinsurance

coverage. In this context, the term reinsurer is intended to include both reinsurers, if the entity is a primary insurer, or retrocessionaires, if the entity is itself a reinsurer.

Adverse scenarios arising from reinsurance risk include the following:

- **Reinsurer insolvency** – the impact of reinsurer insolvency would reflect an assumed "recoverable percentage" of assets to liabilities of the failed reinsurer, and any different treatment of various types of amounts owing from the reinsurer to the ceding entity. The impact may be mitigated by right of offset to amounts owing under all treaties between the two entities, by the preferred position insurers will have relative to other creditors of a failed reinsurer, by the special termination clause in the event of failure, and by any amounts on deposit or in trust with the insurer, or letters of credit in respect of an unlicensed reinsurer. It would normally be appropriate under this scenario to assume that the business currently ceded to the failing reinsurer could be successfully reinsured elsewhere (possibly on less favourable terms), unless there is something unique about the business involved that would make securing such replacement reinsurance difficult.

  Reinsurer insolvency can be due to the circumstances of a specific reinsurer (such as undervaluation of older liabilities), or it could be systemic to the industry due to a major global event or series of global events (e.g., terrorist attack, natural disaster, etc.).

  In developing this scenario, the AA would take into account the following considerations:

  - Affiliated versus non-affiliated reinsurers – the AA may be better able to assess the likelihood of insolvency if a reinsurance arrangement consists of an inter-company pooling agreement or reinsurance with an affiliated company, as opposed to external reinsurance.
  - Rating of reinsurers – reinsurers with weaker rating from rating agencies could be more likely to fail than reinsurers with stronger rating.
  - Registered versus non-registered reinsurers – although non-registered reinsurers may have deposits in Canada covering known liabilities, access to funds to cover unknown liabilities may be more difficult to secure.
  - Concentration of reinsurance – this involves the failure of a reinsurer with a significant share of the ceded liabilities.

  Stress testing may be useful to determine a plausible scenario. The exposure to the reinsurers would be calculated in terms of unpaid claims, including incurred but not reported (IBNR), but less amounts payable to, and security held from, the same reinsurers. The AA may evaluate the impact of default of some of these reinsurers based on level of participation, financial stability, and rating.

- **An increase in reinsurance rates or a reduction in reinsurance commission** – this scenario considers situations where reinsurance action is systemic in nature, due to the overall insurance environment. This is in contrast with ripple effects considered in risk categories 1, 2, and 4, where the reinsurer action is taken in response to situations unique to the insurer, such as poor experience.

- **Reduction in capacity** – this scenario contemplates a reduction in the availability of

reinsurance over the forecast period.

- **Disputes over policy conditions** – the effect on an entity of disputes with reinsurers may be similar to the effect of reinsurer insolvency. To differentiate between these scenarios, however, the AA would consider a dispute that results in a principal reinsurer denying coverage for a significant class of business or category of claims, such as a terrorism occurrence.

Possible ripple effects may include the following:

- Increase in reinsurance rates arising from the need to obtain replacement reinsurance coverage.
- Reduced availability of reinsurance.

Possible management actions may include the following:

- Changing the reinsurance structure.
- Diversifying participants on the reinsurance program.
- Retaining a greater proportion of business to decrease the reinsurance cost.
- Changing reinsurers.
- Reducing primary policy limits.

**6. Investment risk**

Changes in economic conditions have the potential to significantly impact an insurer's financial situation. For example, rapid changes in interest rates, exchange rates, and economic growth rates can affect the insurer's financial condition by leading to concomitant changes in the following:

- The market value of debt and equity securities;
- The default rates on debt securities;
- The match between cash flows from assets and liabilities; and
- The creditworthiness of derivative counterparties.

Adverse scenarios in respect of deterioration of asset values may come from a variety of sources, including the following:

- A significant change in the yield curve;
- An increase in the default rate on debt securities;
- A decrease in the returns and/or value of equities;
- A decrease in the returns and/or value of real estate;
- A decrease in the returns and/or value of subsidiary;
- A significant change in foreign exchange rates; and
- A decrease in the returns and/or value of other major asset categories.

The AA may consider integrated scenarios involving a combination of these events. For example, in the event of a severe market shock, the creditworthiness of derivative counterparties may go down

at the same time the exposure in the re-margining agreement goes up. A period of market turbulence or a shock to market liquidity would be among the scenarios considered.

In selecting appropriate assumptions to determine the adverse scenario, the AA may want to refer to the CIA's *Report on Canadian Economic Statistics*. For example, the AA may base an assumption on the largest one-year decline in equities, or the largest three-year average increase in interest rate. It is important, however, to keep in mind the starting position of the current economic environment.

Alternatively, the AA may use a stochastic model for economic changes, if one is available.

Possible ripple effects may include the following:

- Forced sale or liquidation of assets;
- Significant positive or negative cash flows impacting the insurer's liquidity position;
- Negative change on derivative positions;
- Default by counterparty on derivatives;
- Rating agency downgrade;
- A liquidity crisis caused by large, sustained default losses;
- Increase in the frequency or severity of claims due to the deteriorating economic conditions; and
- Change in discount rate used for calculating actuarial present value of policy liabilities.

Possible management actions may include the following:

- Selling or reinvesting assets;
- Changing the investment strategy;
- Repositioning derivative tools;
- Reducing the amount of business underwritten;
- Implementing rate increases, where possible; and
- Reducing costs through layoffs, consolidation of branch offices, or other similar actions.

**7. Government and political issues risk**

The implementation of a government's policies or regulations usually takes a long time. This normally allows an insurer time to analyze the impact(s) and take the appropriate actions. Time for analysis and action may not be available where implementation of changes occurs quickly, is not foreseen, or is made retroactively effective. In these cases, the adverse scenario may be modelled in the first partial year modelled if the scenario is plausible in that time period.

Adverse scenarios to which an insurer's financial condition may be sensitive include the following:

- A rate freeze or rollback of rates by a government body or regulator on lines of business and jurisdictions in which rates are subject to regulatory approval.
- A change to regulations regarding use of rating variables that may impact the adequacy of

rates and availability of insurance on lines of business and jurisdictions in which rates are subject to regulatory approval.

- A change to legislation that prescribes levels of insurance coverage, such as automobile accident benefits.
- An increase in taxation rates or rules for corporations, such as income tax, capital gains tax deductions, or offshore income.
- Nationalization or privatization of a line of business in a jurisdiction.
- A change to legislation that creates or restricts distribution channels.
- A change in regulatory solvency standards that could increase the capital requirements for property and casualty insurers.
- Political instability that leads to confiscation of assets, closure for new business, exchange controls, etc., particularly in foreign jurisdictions.

Possible ripple effects may include the following:

- Deterioration of loss ratio;
- Increased litigation costs;
- Reduced availability of insurance to the public;
- Increased volume of industry pools resulting in increased assessments;
- Increased regulatory monitoring or filing of rates;
- Forced sale or liquidation of assets;
- Problems with reinsurance coverage;
- Increased policy liabilities related to current reinsurance contracts that are swing-rated, have variable commission, or require reinstatements; and
- Increased reinsurance rates or non-availability of reinsurance at the next renewal.

Possible management actions may include the following:

- Reducing the volume of business written by restricting sales or broker force, freezing new business, or withdrawing from the jurisdiction or line of business;
- Creating or expanding a separate company or distribution channel;
- Reviewing the target mix by line of business or jurisdiction; and
- Reviewing reinsurance coverage, type, or contract terms at next renewal.

**8. Off-balance-sheet items risk**

There are numerous off-balance-sheet items that may adversely affect an insurer's financial condition. Often these off-balance-sheet items arise from new or evolving industry practices that, in subsequent years, do get recognized on the balance sheet by the CPA Canada, the CIA, or regulators. Therefore, the AA needs to develop awareness of any emerging risk that may be relevant to the insurer during the forecast period and assess its potential threat to the insurer's financial condition.

Possible scenarios of off-balance-sheet items and their related risks include the following:

- **Structured settlement –** when a property and casualty insurer purchases an annuity to satisfy a structured settlement, it is exposed to the credit risk associated with the insolvency of the insurer selling the annuity.
- **Contingent liabilities or losses –** there are a variety of contingent liabilities to which an insurer may be exposed, such as tax, litigation, etc.
- **Letters of credit and pledged assets –** the insurer may be exposed to the risk that a lending institution defaults on payment under, for example, a letter of credit, or a call on assets pledged.
- **Capital maintenance agreements –** an insurer could be exposed to capital maintenance agreements it must honour for its subsidiaries.
- **Derivative instruments –** the risks associated with derivatives are discussed in more detail below:
    - Market risk includes liquidity risk and basis risk. Liquidity risk is the risk of not being able to cancel or unwind one's contract when desired or at a favourable price. Basis risk is the risk that the derivative's price behaviour does not act as expected, undoing the intended hedging benefits. The price behaviour of the instruments can change adversely when market conditions change. Market risk is best evaluated on a security basis and on a portfolio basis since some risks may not net against each other.
    - Default (or credit) risk is the risk that a loss will be incurred due to default in making the full payments, when due, in accordance with the terms of the contract.
    - Management risk is the potential for incurring material, unexpected losses on derivatives due to inadequate management supervision and understanding, systems, controls, procedures, accounting, and reporting.
    - Legal risk is the risk that the derivative agreement is not binding as intended.
- **Pension underfunding –** the insurer could be exposed to the potential impact of unfunded liabilities.

Possible ripple effects may include the following:

- Forced sale or liquidation of assets.
- Significant positive or negative cash flows, affecting the insurer's liquidity position.

Possible management actions may include the following:

- Selling or reinvesting assets;
- Changing the reinsurance strategy;
- Repositioning of derivative tools; and
- Reducing costs through layoffs, consolidation of branch offices, or other similar actions.

**9. Related companies risk**

It is possible that adverse scenarios in a related company may have a concomitant impact on the

insurer's financial condition. The choice of adverse scenarios for this risk will tend to be based on actual company organizational structures. Related company risk may also be considered in creating integrated scenarios with other risk categories.

In this context, an insurer's financial condition may be sensitive to the following:

- **A reduction in reliance on the parent company for financial support –** typically, such a situation would arise when a group's financial resources are needed to support a financially impaired parent or affiliate company.
- **An increase in the provision of financial support to the parent –** in this situation, funds the company expected to have for its own purposes are now needed to support other entities in the group.
- **A high level of dependency on group operational resources –** this situation would consider disruptions in services (computer systems, actuarial, etc.) provided by related companies.
- **A rating agency downgrade reflecting difficult financial conditions at the group level.**

Possible ripple effects may include the following:

- Management focus on group rather than company priorities, potentially delaying remedial action;
- A need to provide for service disruptions; and
- Regulator action to protect local policyholders.

Possible management actions may include the following:

- Finding alternative sources of funds for operational support;
- Adjusting premium volumes and mix of business;
- Reviewing reinsurance coverage purchased to mitigate capital strain;
- Reviewing the target mix by line of business or jurisdiction;
- Reviewing type of products offered; and
- Selling or reinvesting assets.

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*Educational Note*

# Guidance for the 2022 Reporting on Capital and Financial Condition Testing for Life, P&C, and Mortgage Insurers

## Committee on Risk Management and Capital Requirements

**February 2022**

Document 222030

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*The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.*

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# MEMORANDUM

**To:** Members in the life and health, property and casualty, and mortgage insurance practice areas

**From:** Steven W. Easson, Chair
Actuarial Guidance Council

Valerio Valenti, Chair
Committee on Risk Management and Capital Requirements

**Date:** February 28, 2022

**Subject:** **Educational Note: Guidance for the 2022 Reporting of Capital and Financial Condition Testing for Life, P&C, and Mortgage Insurers**

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**Introduction**

The Committee on Risk Management and Capital Requirements (CRMCR) has prepared this educational note to provide guidance to actuaries in several areas affecting the reporting of the 2022 regulatory capital requirements and financial condition testing of life, P&C, and mortgage insurers operating in Canada. In addition, the note provides an update on recently published educational notes and introductory information about potential changes in regulatory capital reporting.

This educational note is not intended to replace the review of applicable guidelines by the actuary but provides a high-level summary of key changes and updates. The actuary should refer to regulators' publications and to the relevant guideline(s) to ascertain whether the changes impact the actuary's situation.

As the COVID-19 situation continues to evolve, it is highly recommended that actuaries pay close attention to all guidance and updates from the Office of the Superintendent of Financial Institutions (OSFI), the Autorité des marchés financiers (AMF), and the Canadian Institute of Actuaries (CIA). The information presented in this educational note may not fully capture all the impacts of the pandemic on timelines and regulatory requirements by the time of its publication.

A preliminary version of this educational note was shared with the following committees for their review and comments:

- Property and Casualty Financial Reporting Committee
- Committee on Life Insurance Financial Reporting
- Appointed Actuary Committee
- Enterprise Risk Management Practice Committee

This educational note was also presented at the Actuarial Guidance Council (AGC) in the month preceding its approval. The CRMCR is satisfied it has sufficiently addressed the material comments received by the various committees and the AGC.

The creation of this cover letter and educational note has followed the AGC's protocol for the adoption of educational notes. In accordance with the CIA's *Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice and Research Documents*, this educational note has been prepared by CRMCR and has received final approval for distribution by the AGC on February 25, 2022.

The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.

As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.

The CRMCR would like to acknowledge the contribution of the subcommittee that assisted in the development of this educational note: Christian Nadeau-Alary (Chair of the subcommittee), Steve Firman, Andrew Lang, Bruce Langstroth, Ivy Lee, Devika Prashad, Sylvain St-Georges, and Valerio Valenti.

**Guidance to members on specific situations**

From time to time, CIA members may seek advice or guidance from the CRMCR. Both the CIA and the CRMCR strongly encourage such dialogue. CIA members would be assured that it is proper and appropriate for them to consult with the chair or vice-chairs of the CRMCR.

CIA members are reminded that responses provided by the CRMCR are intended to assist them in interpreting the CIA Standards of Practice (SOP), educational notes, and *Rules of Professional Conduct*, in assessing the appropriateness of certain techniques or assumptions. A response from the CRMCR does not constitute a formal opinion as to whether the work in question is in compliance with the CIA SOP. Guidance provided by the CRMCR is not binding upon the member.

**Recent guidance**

The following are recent regulatory guidelines issued by OSFI and the AMF and relevant CIA educational notes and SOP:

<u>OSFI Guidelines</u>

- Regulatory capital requirements: *Supplementary Guidance for The Treatment of Participating Insurance in Guideline A: Life Insurance Capital Adequacy Test* (LICAT Advisory) (January 1, 2021)

- COVID-19 FAQ: *COVID-19 Measures – FAQs for Federally Regulated Insurers* (November 4, 2021)

AMF Guideline

- Regulatory capital requirements: *Capital Adequacy Requirements Guideline – Insurance of persons (CARLI)* (January 1, 2021) – English version available soon

The publications listed above can be found on the OSFI website under Table of Guidelines or Table of Advisories or the AMF website under Guidelines – Insurers. A list of some of the current guidelines, filing requirements, educational notes, and research papers related to capital management is available in the appendices.

**Notable potential future changes**

OSFI Guidelines

In November 2021, OSFI issued *Draft Guideline B-13: Technology and Cyber Risk Management* for public comments by February 9, 2022. The final guideline is expected to be published in late June.

Final OSFI Guidelines B-2 (*Property and Casualty Large Insurance Exposures and Investment Concentration)*, and B-3 (*Sound Reinsurance Practices and Procedures)* were released in February 2022 and will come into effect on January 1, 2025. The finalization of OSFI Guideline E-25 (*Internal Model Oversight Framework)* is on hold until further notice.

Based on OSFI's May 2021 near-term plan of prudential policy, additional guidelines are expected to be released in 2022. As such, the list above may not be exhaustive. Actuaries should refer to the OSFI website for additional communications as they become available.

AMF Guidelines

On October 21, 2021, the AMF launched a six-week public consultation on an updated *Sound Commercial Practices Guideline* that applies to authorized financial institutions in Québec. The main updates reflected recent changes to international and Canadian sound commercial principles, new or amended acts or regulations, and observations based on supervisory activities.

On November 4, 2021, the AMF launched a three-month public consultation on a new *Incentive Management Guideline* that will apply to authorized financial institutions in Québec. The main elements reflected in the draft guideline include the updates of the *Sound Commercial Practices Guideline*, work on incentives management carried out in Canada, and observations based on supervisory activities.

The AMF intends to release both final guidelines in 2022. Detailed information can be found in the *Public consultations* page of the AMF website.

Regulatory Capital Guideline changes due to IFRS 17

OSFI and the AMF will adapt their life, P&C, and mortgage insurance regulatory capital requirement guidelines to reflect changes related to IFRS 17.

As part of directed confidential consultations, they have issued draft guidelines and conducted quantitative impact studies (QIS, QIS 2, and QIS 3), which were due respectively

on October 31, 2019, December 31, 2020, and in phases between October 1, 2021 and November 30, 2021. Alongside QIS 3, a public consultation was conducted on the draft guidelines. Additional data calls from OSFI and the AMF are expected in 2022 for selected companies to supplement the QIS work.

OSFI plans to conduct a Transition Readiness Test (TRT) for all federally regulated insurers (FRIs), and Québec life insurers will be required to submit the interim capital form under IFRS 17. Both are expected to be due by September 29, 2022[1].

The final LICAT, CARLI, Minimum Capital Test (MCT), and Mortgage Insurer Capital Adequacy Test (MICAT) 2023 guidelines are expected to be distributed to the insurers by the end of June 2022 and published on OSFI's and AMF's websites in August 2022.

Segregated fund guarantee (SFG) capital changes

In parallel, OSFI and the AMF have conducted a series of QIS to develop a new standard approach to determine capital requirements for segregated fund guarantee (SFG) risk, which will reflect IFRS 17.

In June 2021, OSFI and the AMF announced that they were deferring the implementation date of the new approach to January 1, 2025 (from January 1, 2023). Between 2023 and 2025, the current method for the capital treatment of SFG risk will be retained, updated to accommodate IFRS 17.

In November 2021, OSFI published a letter that laid out the timelines and consultations to develop the new approach.

- SFG QIS 5 including sensitivity tests and qualitative questionnaire is expected to be launched in February 2022.
- The final approach will be detailed in the new Chapter 7 of the LICAT 2025 Guideline.

Concurrently, the AMF announced the same objectives, timelines, and consultations in a letter sent directly to the appointed actuaries of Québec insurers.

Financial Condition Testing educational note

To reflect changes related to IFRS 17, the CRMCR is expecting to release in late 2022 a revised version of the Financial Condition Testing (FCT) educational note with an effective date of January 1, 2023[2]. Additional guidance with respect to IFRS 17 for the production of 2022 FCT reports is provided in Section 4 of this educational note.

New Enterprise Risk Management (ERM) part for Canadian Standards of Practice

Following the release of the International Standard of Actuarial Practice 6 (ISAP 6) – Enterprise Risk Management and IAIS Insurance Core Principles, the Actuarial Standards Board (ASB) established a designated group to review the Canadian SOP for consistency

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[1] July 31, 2023 for subsidiaries of deposit taking institutions.

[2] April 1, 2023 for some self-regulatory insurance organizations and November 1, 2023 for insurance subsidiaries of deposit-taking institutions.

with this new ISAP. A new Part 8000 on enterprise risk management is being developed and is expected to be added to the SOP in 2022.

This educational note is organized in the following sections:


1. Life regulatory capital requirements for 2022 *(slightly modified)* ..... 7
2. P&C regulatory capital requirements for 2022 *(slightly modified)* ..... 7
3. Mortgage Insurance regulatory capital requirements for 2022 *(slightly modified)* ..... 8
4. Considerations for the 2022 Financial Condition Testing (FCT) *(modified)*..... 9
5. Considerations for the 2022 Own Risk and Solvency Assessment (ORSA) *(modified)* ..... 13
6. OSFI *Guideline B-3: Sound Reinsurance Practices and Procedures* (*modified*)..... 14
7. OSFI *Guideline B-2: Property and Casualty Large Insurance Exposures and Investment Concentration* (*modified*)..... 15
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If you have any questions or comments regarding this educational note, please contact the CIA head office at guidance.feedback@cia-ica.ca.

SWE, VV

## 1. Life regulatory capital requirements for 2022 *(slightly modified)*

The Office of the Superintendent of Financial Institutions (OSFI) and the Autorité des marchés financiers (AMF) introduced new regulatory capital frameworks called, respectively, Life Insurance Capital Adequacy Test (LICAT) and Capital Adequacy Requirements for Life and Health Insurers (CARLI), effective January 1, 2018. Each year, OSFI and the AMF consider whether changes are required to improve the risk measures, address emerging issues, and encourage improved risk management.

The guidelines provide the framework within which OSFI and the AMF assess whether a life and health insurance company maintains adequate capital and whether a foreign company operating in Canada on a branch basis maintains an adequate margin. The guidelines describe the capital required using measures based on risks and define the capital or the margin that is available to meet the minimum standard.

OSFI is not expected to publish an updated version of the LICAT Guideline for 2022. Therefore, OSFI's LICAT 2019 Guideline, effective January 1, 2019, remains valid for 2022.

In November 2020, OSFI issued an advisory to the LICAT 2019 Guideline to remain in effect until January 1, 2023, at which time the guidance will be incorporated into the LICAT Guideline. Following this issuance, the draft LICAT 2020 Guideline published in February 2020 was removed from OSFI's website.

Notable guidance in the advisory of the LICAT 2019 Guideline includes the following:

- Introduction of a smoothing technique for determining the interest rate risk requirements for participating insurance.
- Clarification on OSFI's expectations related to claiming participating insurance credit and the treatment of negative dividend stabilization reserves.

The AMF published an updated CARLI 2021 Guideline, effective January 1, 2021. Notable changes in the AMF's CARLI 2021 Guideline compared to AMF's CARLI 2020 Guideline were as follows:

- Section 5.1.2.3 Required capital for interest rate risk – Introduction of a smoothing technique for determining the interest rate risk requirements for participating insurance.
- Section 9.1.1 Conditions for the participating product credit – Clarification of the AMF's expectations related to claiming participating insurance credit and the treatment of negative dividend stabilization reserves.
- Section 2.1.2.7 Investments in capital instruments of P&C insurance company subsidiaries, dissimilar regulated financial subsidiaries and non-qualifying subsidiaries – Reinstatement of the complete deduction from Tier 1 capital of goodwill and other intangible assets related to P&C subsidiaries.

## 2. P&C regulatory capital requirements for 2022 *(slightly modified)*

OSFI's Guideline A, Minimum Capital Test (MCT) for property & casualty insurance companies was originally implemented in 2003. The following year, the AMF implemented its own MCT, the

*Guideline on Capital Adequacy Requirements – Property and Casualty Insurance*, largely harmonized with OSFI's MCT guideline. In June 2019, the AMF also published two new MCT guidelines regarding the solvency requirements for self-regulatory organizations and reciprocal unions that are authorized to carry on insurer activities[3]. These new guidelines were, for the most part, very similar to the AMF's MCT 2019 guideline for traditional P&C insurers, but with necessary adaptations. Each year, OSFI and the AMF consider whether changes are required to improve the risk measures, address emerging issues, and encourage improved risk management.

The guidelines provide the framework within which OSFI and the AMF assess whether a P&C company maintains adequate capital and whether a foreign company operating in Canada on a branch basis maintains an adequate margin. The guidelines describe the capital required using measures based on risks and define the capital or margin that is available to meet the minimum standard.

OSFI is not expected to publish an updated version of the MCT Guideline for 2022. Therefore, OSFI's MCT 2019 guideline, effective January 1, 2019, remains valid for 2022. The AMF is not expected to publish updated versions of MCT guidelines for 2022. Therefore, AMF's MCT 2020 guidelines remain valid for 2022.

The transition period in OSFI's MCT 2019 and the AMF's MCT 2020 guidelines for the increase in the margin required for reinsurance ceded to unregistered reinsurers from 15% to 20% in Sections 4.3.3.3 (OSFI) and 3.4.2.2 (AMF) will end on December 31, 2022.

### 3. Mortgage Insurance regulatory capital requirements for 2022 *(slightly modified)*

OSFI introduced a new regulatory capital framework for mortgage insurers called *Mortgage Insurer Capital Adequacy Test (*MICAT), effective January 1, 2019. The guideline combines the January 1, 2017 advisory *Capital Requirements for Federally Regulated Mortgage Insurers* (Advisory) and the relevant portions of the guideline *Minimum Capital Test for Federally Regulated Property and Casualty Insurance Companies* (MCT Guideline) into a single document.

The guideline provides the framework within which OSFI assesses whether a mortgage insurance company maintains adequate capital. The guideline describes the capital required using measures based on risks and defines the capital that is available to meet the minimum standard.

Property and casualty insurance companies that are not mortgage insurers will continue to determine their regulatory capital requirements using the MCT guidelines.

OSFI is not expected to publish an updated version of the MICAT guideline for 2022. Therefore, OSFI's MICAT 2019 guideline remains valid for 2022.

[3] When we refer to a P&C company and MCT in this document, we also refer to self-regulatory organizations and

## 4. Considerations for the 2022 Financial Condition Testing (FCT) *(modified)*

### Revised *Standard of Practice*: Section 2500 *(modified)*

On September 10, 2019, the ASB approved the revised SOP, with an effective date of January 1, 2020.

In April 2020, the CRMCR issued an educational note, *Financial Condition Testing*, to provide additional guidance to the actuary with respect to the revised SOP. This guidance remains valid for 2022 FCT with the additional guidance provided in the following sections.

### Transition to IFRS 17 (modified)

In June 2020, the International Accounting Standards Board (IASB) published the final standard for Insurance Contracts, IFRS 17. The standard will be effective for annual reporting periods beginning on or after January 1, 2023. The IASB website contains the most current information[4].

Accounting and capital basis for the 2022 FCT process

In principle, FCT forecasts beyond the effective date would be produced under IFRS 17 and the updated regulatory capital requirement guidelines.

In practice, the actuary may face a number of challenges in preparing financial projections reflecting IFRS 17 and updated capital requirements for the 2022 process, such as:

- Accounting and actuarial policies and methodologies may not be final and potential choices might have material impacts on the financial projections;
- Actuarial models and financial reporting systems development may not be complete, producing practical limitations on the actuary's ability to produce financial projections;
- The company's latest business forecast may not project certain cash flows or assumptions needed under IFRS 17, requiring the actuary to calibrate additional assumptions over the forecast period;
- Regulatory capital guidelines may not be finalized; and
- Tax and other parameters that affect the projections may not be finalized.

The actuary would perform FCT in 2022 either using IFRS 17 throughout the projection period, or using the current accounting standards, actuarial standards, and current regulatory capital guidelines, together with additional quantitative and qualitative analysis on IFRS 17. An FCT performed under the current accounting standards and supplemented only with a qualitative analysis on IFRS 17 would not be an acceptable practice[5].

The quantitative analysis of IFRS 17 would be performed on a best effort basis and using working assumptions for guidelines and internal decisions that may not be final at the time of the FCT analysis. Working assumptions would be described in the report with focus on areas of material sensitivity in relation to the FCT results.

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[4] Note that an eIFRS professional account is required to access the final standards and related documents.

[5] Unless regulatory guidance states otherwise. For example, IFRS 17 qualitative discussion only would be sufficient to comply with the AMF requirements for Quebec chartered P&C insurers 2022 FCT reporting.

The actuary would clearly disclose the basis under which the projections were produced, the regulatory capital requirements guideline used, the key assumptions made regarding the application of IFRS 17 and the taxation of earnings, and the sensitivity of results to material decisions and assumptions.

IFRS 17 quantitative and qualitative analysis

For an FCT performed under the current accounting standards, the actuary would be expected to provide a quantitative analysis of the insurer's expected statement of financial position and regulatory capital position at the effective date under the base scenario using IFRS 17 and the most recent version of the regulatory capital requirements under the IFRS 17 framework. Depending on the timing of the 2022 FCT process, the actuary may need to use the latest draft if the final version has not yet been released.

An example of a minimally acceptable approach would be to:

- Leverage the quantification of the implications of IFRS 17 completed as part of QIS or additional data calls,
- Update the financial projections at the effective date on a best effort basis, reflecting the most recent version of regulatory capital requirements, and
- Supplement the quantitative analysis by a qualitative discussion of directional impacts of any other material changes since the QIS or data call.

Depending on the circumstances, other considerations for commentary would include a qualitative assessment of directional impacts of IFRS 17 on the base and adverse scenario results beyond the effective date over the forecast period, as well as the potential impact of the new accounting standards on adverse scenarios design.

Timing of 2022 FCT report

Quantitative impact studies, the transition readiness test or additional data calls could reveal potential issues or significant impacts not identified in the most recently filed FCT report. If so, it would be appropriate for the actuary to describe these potential issues to the board or chief agent along with any potential mitigating actions, either in the next scheduled FCT report or presentation, or through regular IFRS 17 updates.

The actuary would consider submitting an updated FCT report if an adverse change in the insurer’s circumstances since the last investigation may be so significant that to delay reporting to the time of the next scheduled investigation would be imprudent. For example, failure to meet the internal target capital ratio(s), the adoption of a radically different business plan, or major changes in key internal accounting decisions may necessitate the preparation of an immediate report.

An FCT report produced towards the end of the year would be expected to be more complete or reliable in its assessment of IFRS 17.

In any situation where the risks associated with the transition may not be reliably quantified and the actuary is concerned that the transition to IFRS 17 may impact the satisfactory financial condition of the insurer, it would be appropriate for the actuary to explain in the FCT report why a reliable estimate of IFRS 17 transition impacts could not be produced.

In all cases, the expected impacts of IFRS 17 on the testing of the satisfactory financial condition of the company would be reflected in the conclusions of the report.

**Additional guidance on the 2022 FCT (modified)**

Following feedback from Appointed Actuaries, OSFI, and the AMF, the CRMCR decided to provide the following additional clarifications:

Purpose of the going concern scenario

The going concern scenario tests an insurer's ability, through its developing capital position, ripple effects, and corrective management actions, to maintain operations and meet its obligations while meeting or exceeding regulatory minimum levels. The scenario is more likely to occur and/or be less severe than a solvency scenario.

It is important to note that the threshold for going concern scenarios is the minimum regulatory level, whereas the threshold for solvency scenarios is a higher statement value of assets than liabilities. Given the difference in thresholds between solvency and going concern scenarios, it is possible that satisfactory financial condition would be met against one threshold but not the other.

In some cases, a solvency scenario can meet both satisfactory financial condition thresholds of going concern and solvency scenarios. The actuary would still be interested in performing additional scenarios to further understand other potential risks that may impact the insurer's ability to maintain operations and meet its obligations while meeting or exceeding regulatory minimum levels.

Adverse scenario calibration

While the FCT educational note recommends minimum percentiles for the solvency and going concern scenarios, it may not be possible to measure the percentile severity of a stand-alone or integrated scenario.

In these cases, the actuary would be comfortable that the scenario is sufficiently adverse to appropriately test the insurer's ability to meet the thresholds for a satisfactory opinion. The actuary would disclose in the FCT report the reasons for being comfortable with the adversity of the scenario.

The approach used to determine the scenarios, or the risk factors within an integrated scenario, could be deterministic or stochastic, or a combination of the two. Considerations for a deterministic approach could include the variability in historical results or credibility of data.

Opinion

Following changes to Section 2500 of the SOP, the opinion of the actuary was modified to link to ORSA internal target(s) and explicitly allow for an opinion of "satisfactory subject to" certain conditions. The wording of the FCT opinion included in the SOP should be used by all insurers.

Climate change risk

The impact of climate change is an important emerging risk that the actuary could consider as an integrated adverse scenario. Considerations for the development of the scenario could be

based on OSFI's categorization of climate-related risks in their January 2021 discussion paper, *Navigating Uncertainty in Climate Change*:

- Physical risk, which arises from a changing climate increasing the frequency and severity of wildfires, floods, wind events, and rising sea levels, among other things.
- Transition risk, which stems from efforts to reduce greenhouse gas emission as the economy shifts towards a lower greenhouse gas footprint.
- Liability risk, which relates to potential exposure to the risks associated with climate-related litigation.

In OSFI's October 2021 industry letter, they summarize the responses to the discussion paper. The respondent feedback indicated that OSFI's characterization of physical risk should include the risk to public health (morbidity and mortality impacts) due to extreme weather events, poor air quality and increased risk of vector-borne diseases due to changing temperatures, precipitation, and humidity.

In January 2022, the Bank of Canada and OSFI released the results of a pilot project launched in late 2020 on climate scenario analysis. The final report, *Using Scenario Analysis to Assess Climate Transition Risk*, presents key takeaways, the methodologies used in the pilot to assess climate-related financial risk, and lessons learned to inform and support the broader financial sector going forward.

On the same day, OSFI also released an industry letter announcing that it will be issuing draft guidance for federally regulated financial institutions later this year. The draft guidance will focus on achieving five prudential outcomes: awareness, governance and strategy, risk management, financial resilience, and operational resilience. The industry letter also mentions that OSFI continues to assess whether its regulatory capital framework needs to reflect the climate-related financial risks. In addition, it notes that insurers are expected to "evaluate and measure capital available to protect against material risks, including climate-related financial risks" as part of their ORSA process.

Technology and cyber risk

Technology and cyber risk is an important emerging risk that the actuary could consider as an adverse scenario. Considerations for the development of the scenario could be based on OSFI's *Draft Guideline B-13: Technology and Cyber Risk Management*, further discussed in Section 9 of this educational note and AMF's guideline on *Information and Communications Technology Risk Management*.

In May 2020, the CIA in partnership with the Society of Actuaries and the Casualty Actuarial Society published the joint report *Quantification of Cyber Risk for Actuaries – An Economic-Functional Approach*. The study presents the development of a generic model to quantify cyber risk that can be applied by any organization.

Special considerations due to COVID-19

As the COVID-19 situation continues to evolve, insurers may experience unforeseen financial results due to market conditions and/or additional claim activity. The following excerpts from Section 2500 of the SOP may be relevant in this situation:

.03 The appointed actuary should ensure that the investigation is current. The investigation should take into consideration recent events and recent financial operating results of the insurer.

.13 The actuary would consider recent events and recent operating results of the insurer up to the date of the report.

.14 If an adverse event occurs between the date of the report and the date of its presentation to the insurer's board of directors (or its chief agent for Canada), then the actuary would, at a minimum in the presentation to the insurer's board of directors (or its chief agent for Canada), address the event and its potential implications on the results of the investigation. If appropriate, the actuary would redo the investigation.

Any adjustments made to the base scenario due to COVID-19 would typically also affect the adverse scenarios.

The research papers, *Considerations for the Development of a Pandemic Scenario* and *Report 2: Canadian Insurance Industry Monthly Aggregate Data Analysis* may also be useful for the development of the base and/or adverse scenarios.

The CIA is active in informing members about COVID-19, through its *Seeing Beyond Risk* website. The COVID-19 Trending section contains analyses, webcasts, links, and articles that are relevant to actuarial practice in the face of the current situation.

OSFI also provides relevant updates through its COVID-19 Measures FAQ which is expected to be updated regularly as the pandemic situation evolves.

## 5. Considerations for the 2022 Own Risk and Solvency Assessment (ORSA) *(modified)*

As per Subsection 2430 of the SOP, the ORSA report is part of the information needed to provide an understanding of the insurer's operations, its obligations, and the resources available to meet those obligations.

On September 10, 2019, the Actuarial Standards Board (ASB) approved the revised SOP to incorporate changes to Section 2500 Dynamic Capital Adequacy Testing (now Financial Condition Testing). One of the objectives of the revisions is to allow for a better alignment with ORSA regulatory requirements as they relate to work needed to report on the expected future financial condition of an insurance entity.

The following guidelines have been published by Canadian insurance regulators with regard to ORSA:

- OSFI, *Guideline E-19: Own Risk and Solvency Assessment*, effective January 1, 2018.
- OSFI, Guideline A-4: *Regulatory Capital and Internal Capital Targets*, effective January 1, 2018.

- AMF, *Capital Management Guideline*, Section 5, Own Risk and Solvency Assessment, effective May 2015.

In addition, here are other actuarial publications on ORSA:

- *Report on the CIA ORSA Survey conducted in April 2015*.
- *IAA Risk Book*, "Chapter 10—Own Risk and Solvency Assessment (ORSA)," March 8, 2016.

IFRS 17 Considerations

The new insurance accounting standard will be effective for fiscal years beginning on or after January 1, 2023.

As discussed in the FCT section, practical IFRS 17 implementation limitations may require the actuary to make approximations to reflect the impact of IFRS 17 in their 2022 ORSA process including producing IFRS 17 financial projections, the setting of internal capital targets and supporting the identification and measurement of risk appetite, risk limits, and risk profile.

The general approach actuaries would take in relation to their work is as follows:

- The actuary would make best efforts to produce IFRS 17 financial projections;
- The actuary would clearly identify and describe IFRS 17-specific assumptions and other aspects of their projections where the modelling decision may materially affect the work; and
- The actuary would test the sensitivity of results to those key decisions and assumptions, and disclose the impact.

**6. OSFI *Guideline B-3: Sound Reinsurance Practices and Procedures* (*modified*)**

On June 8, 2018, OSFI issued a *Discussion Paper on OSFI's Reinsurance Framework* that included proposals to enhance and clarify OSFI's expectations for prudent reinsurance practices.

On June 12, 2019, OSFI issued proposed revisions to *Guideline B-3: Sound Reinsurance Practices and Procedures*. The revisions to the guideline reflect some of the proposals in the discussion paper, as well as comments received in response to the discussion paper.

On February 11, 2022, OSFI issued its final *Guideline B-3: Sound Reinsurance Practices and Procedures* which comes into effect on January 1, 2025. In Annex A of the accompanying letter, OSFI presents a summary of key comments received on the *draft revised Guideline B-3* as well as OSFI's responses.

Key changes to the final guideline encourage insurers to better identify and manage risks arising from the use of reinsurance, particularly counterparty risk.

Revisions to the guideline include OSFI's expectations that:

- Reinsurance payments flow directly to a cedant insurer in Canada.
- An insurer should not cede substantially all of its risks.

- A federally regulated insurer's (FRI's) ceding limits should be set for its overall book of business, and may also be established by line of business, as appropriate.
- OSFI will generally not recognize or grant credit for a foreign FRI's reinsurance arrangement(s) when risks insured in Canada are ceded back to the foreign FRI's home office through affiliated reinsurers.

Based on the final guideline, some insurers may need to adjust aspects of their reinsurance programs. OSFI expects to hold industry information sessions in the coming months to provide additional clarity regarding OSFI's expectations and supervisory approach.

**7. OSFI *Guideline B-2: Property and Casualty Large Insurance Exposures and Investment Concentration* (*modified*)**

On November 26, 2020, OSFI issued for comment *Draft Revised Guideline B-2: Property and Casualty Large Insurance Exposures and Investment Concentration* for federally regulated property and casualty insurance companies (P&C FRIs). The revisions to this guideline reflect written input, meetings, and dialogue with industry participants in response to the discussion paper on OSFI's reinsurance framework.

On February 11, 2022, OSFI issued its final *Guideline B-2: Property and Casualty Large Insurance Exposures and Investment Concentration* which comes into effect on January 1, 2025. In Annex B of the accompanying letter, OSFI presents a summary of key comments received on the *draft revised Guideline B-2* as well as OSFI's responses.

The final guideline addressed OSFI's expectation for single large insurance exposures for P&C FRIs:

- P&C FRIs should have a comprehensive gross underwriting limit policy that is consistent with the P&C FRI's risk appetite framework.
- P&C FRIs are expected to develop and establish their own criteria and approach for determining and measuring the maximum loss on a single insurance exposure.
- At no time should any P&C FRI's net retention, plus its largest net counterparty unregistered reinsurance exposure, due to the occurrence of a maximum loss on a single insurance exposure, exceed the limits set by OSFI.

The requirements for investment concentration remained unchanged in the final guideline.

Based on the final guideline, some insurers may need to adjust aspects of their reinsurance programs. OSFI expects to hold industry information sessions in the coming months to provide additional clarity regarding OSFI's expectations and supervisory approach.

**8. OSFI *Draft Guideline E-25: Internal Model Oversight Framework*, for P&C insurers (*unchanged*)**

On June 21, 2019, OSFI issued for comment *Draft Guideline E-25: Internal Model Oversight Framework* for federally regulated property and casualty insurance companies.

This guideline applies to insurers that have received approval to use an internal model to calculate MCT regulatory capital requirements for insurance risk. The guideline establishes

OSFI's expectations for insurers when they establish and maintain an oversight framework for the internal models.

The key elements of the draft guideline include:

- establishing a model oversight framework;
- periodic assessment of the framework via an internal model risk control (IMRC) process;
- documentation of the framework and IMRC process; and
- periodic review and assessment of the framework and the IMRC process by internal audit.

The finalization of OSFI Guideline E-25 is on hold until further notice.

**9. OSFI *Draft Guideline B-13: Technology and Cyber Risk Management* (*new*)**

On November 9, 2021, OSFI launched a three-month public consultation on *Draft Guideline B-13: Technology and Cyber Risk Management* that applies to all federally regulated financial institutions.

The draft outcomes-based guideline sets out OSFI's expectations for sound technology and cyber risk management across five domains (Governance and Risk Management, Technology Operations, Cyber Security, Third-Party Provided Technology and Cyber Risk, Technology Resilience). Each domain is guided by a desired outcome and related technology-neutral principles that collectively contribute to operational resilience.

As part of the consultation, OSFI asked whether they have struck the right balance between principles and prescriptiveness. In this guideline, OSFI has moved beyond a principles-based approach. In the accompanying letter, OSFI notes that feedback on the fall 2020 discussion paper indicated that some companies want more prescription in implementing best practices particularly in relation to cybersecurity. They also acknowledge that some companies may already exceed a number of the more detailed expectations or find them unnecessarily prescriptive.

When reviewing the draft guideline, companies are encouraged to refer to the annex of the accompanying industry letter as it provides additional context.

OSFI intends to release the final guideline in 2022.

## Appendix A: OSFI documentation

### Guidelines and advisories

| Filename | Title | Effective Date |
|---|---|---|
| LICAT19_adv | *Supplementary Guidance for The Treatment of Participating Insurance in Guideline A: Life Insurance Capital Adequacy Test* | 01/01/2021 |
| LICAT19 | *Life Insurance Capital Adequacy Test* | 01/01/2019 |
| MCT2019 | *Minimum Capital Test for Federally Regulated Property and Casualty Insurance Companies* | 01/01/2019 |
| MICAT | *Mortgage Insurer Capital Adequacy Test* | 01/01/2019 |
| MICAT_ADV_2019 | *MICAT Total Requirements for FTHBI Mortgages* | 01/11/2019 |
| A4 | *Regulatory Capital and Internal Capital Targets* | 01/01/2018 |
| E19 | *Own Risk and Solvency Assessment* | 01/01/2018 |
| B5-19 | *Asset Securitization* | 01/01/2019 |
| B21 | *Residential Mortgage Insurance Underwriting Practices and Procedures* | 01/03/2019 |
| B2_PC | *Property and Casualty Large Insurance Exposures and Investment Concentration* | 01/01/2025 |
| B3_SND | *Sound Reinsurance Practices and Procedures* | 01/01/2025 |
| Draft B13 | *Technology and Cyber Risk Management* | TBD |
| Draft E25 | *Internal Model Oversight Framework* | TBD |

**Filing instructions and reporting requirements**

| Filename | Title | Effective Date |
|---|---|---|
| life-rr | *Reporting Requirements for Life Insurance Companies and Fraternal Benefit Societies* | 01/01/2020 |
| pc-rr | *Reporting Requirement for Property and Casualty Insurance Companies* | 01/01/2020 |
| LICAT_inst | *LICAT Filing Instructions* | 01/12/2019 |
| LICAT_dscreq | *Life Insurance Capital Adequacy Test Public Disclosure Requirements* | 31/12/2018 |

**Appendix B: AMF documentation**

**Guidelines**

| Filename | Title | Effective Date |
|---|---|---|
| ld_escap_01-2021_pf.pdf | *Capital Adequacy Requirements Guideline – Insurance of persons (CARLI)* (English version available soon) | 01/01/2021 |
| ld_tcm_01_2020_pf_an.pdf | *Guideline on Capital Adequacy Requirements – Property and Casualty Insurance (MCT)* | 01/01/2020 |
| ld_tcm_oar_01_2020_pf_an.pdf | *Guideline on Capital Adequacy Requirements – Self-Regulatory Organizations (MCT)* | 01/01/2020 |
| ld_tcm_ur_01_2020_pf_an.pdf | *Guideline on Capital Adequacy Requirements – Reciprocal Unions (MCT)* | 01/01/2020 |
| ld_gestion_capital_an.pdf | *Capital Management Guideline* | 01/05/2015 |

**Filing instructions and reporting requirements**

| Filename | Title | Effective Date |
|---|---|---|
| guide_actuaire_esf_vie__anglais.pdf | *Actuary's Guide regarding the Financial Condition Testing report for Insurers of Persons* | 01/03/2021 |
| actuary_guide_pc_fct.pdf | *Actuary's Guide regarding the Financial Condition Testing report of P&C Insurers* | 31/01/2022 |
| guide-depot-releves-trimestiels-supplements-annuels_fr.pdf | *Instructions for Quarterly and Annual Statements (CARLI)* (Available in French only) | 01/01/2021 |

**Appendix C: CIA guidance**

| Accession Number | Title | Publication Date |
|---|---|---|
| 220057 | Educational note: *Financial Condition Testing* | 27/04/2020 |
| 219113 | Revised standard of practice: *Section 2500 Financial Condition Testing* | 15/10/2019 |
| 218097 | Revised educational note: *Regulatory Capital Filing Certification for Life Insurers* | 12/07/2018 |
| 218033 | Educational note: *Life Insurance Capital Adequacy Test (LICAT) and Capital Adequacy Requirements for Life and Health Insurance (CARLI)* | 08/03/2018 |
| 221023 | Report: *Report 2: Canadian Insurance Industry Monthly Aggregate Data Analysis* | 23/02/2021 |
| 209095 | Research paper: *Considerations for the Development of a Pandemic Scenario* | 15/10/2009 |

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*Revised Educational Note*

# Subsequent Events

**Committee on Property and Casualty Insurance Financial Reporting**

**October 2015**

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*Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute Standards of Practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying Standards of Practice in respect of specific matters. Responsibility for the manner of application of Standards of Practice in specific circumstances remains that of the members.*

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# MEMORANDUM

**To:** All Fellows, Affiliates, Associates, and Correspondents of the Canadian Institute of Actuaries Practising in Property and Casualty Insurance

**From:** Pierre Dionne, Chair
Practice Council

Julie-Linda Laforce, Chair
Committee on Property and Casualty Insurance Financial Reporting

**Date:** October 15, 2015

**Subject:** **Revised Educational Note—Subsequent Events**

The Committee on Property and Casualty Insurance Financial Reporting of the Canadian Institute of Actuaries (CIA) has revised this educational note for use by property and casualty actuaries to provide additional guidance. The purpose of this educational note is to provide guidance in identifying subsequent events and in understanding appropriate courses of action for such events. In preparing this educational note, input was sought from insurance audit professionals at Deloitte, KPMG and PricewaterhouseCoopers.

In accordance with the Institute's Policy for Due Process for the Approval of Guidance Material other than Standards of Practice, this educational note has been prepared by the Committee on Property and Casualty Insurance Financial Reporting, and has received final approval for distribution by the Practice Council on October 13, 2015. As outlined in subsection 1220 of the Standards of Practice, "*The actuary should be familiar with relevant educational notes and other designated educational material.*" That subsection explains further that a "practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation." As well, "educational notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them."

If you have any questions or comments regarding this educational note, please contact Julie-Linda Laforce at julielindalaforce@axxima.ca.

PD, JLL

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## 1. Introduction

The Committee on Property and Casualty Insurance Financial Reporting of the Canadian Institute of Actuaries (CIA) prepared this educational note to provide guidance to property and casualty (P&C) actuaries in identifying whether events are subsequent events and in understanding appropriate courses of action for such events. This educational note focuses on subsequent events that are relevant to the actuary performing an actuarial analysis in support of financial reporting (e.g., insurance contract liabilities valuations supporting year-end and quarterly financial statements). It relies on the CIA's current definitions and Standards of Practice related to subsequent events, and also relies extensively on definitions of the Chartered Professional Accountants of Canada (CPA Canada) and input from senior audit professionals specializing in insurance organizations.

Federal and provincial insurance acts require that the Annual Return of a P&C insurance company be accompanied by an actuarial report on the insurance contract liabilities. (Insurance contract liabilities refer to both claim liabilities and premium liabilities.) The financial statement contained within the Annual Return is to be prepared in accordance with International Financial Reporting Standards, which is one of the financial reporting frameworks included in Canadian generally accepted accounting principles (GAAP). Accordingly, accounting and actuarial standards are relevant when considering the appropriate treatment of subsequent events in financial reporting for P&C insurance companies. Key standards that deal with the treatment of subsequent events are IAS 10 *Events After the Reporting Period* in Part 1 IFRS of the CPA Canada *Handbook – Accounting* and subsection 1520 of the Standards of Practice.

This educational note begins with the definition of a subsequent event as contained in the Standards of Practice and examination of the accounting standards related to events after the reporting period, particularly the distinction between adjusting events and non-adjusting events, previously known as Type A and Type B events respectively. In considering events, a very important decision point for the actuary is materiality. Consequently, this educational note addresses materiality and refers the reader to the 2007 report from the CIA Task Force on Materiality. Next, the event decision tree is presented; this decision tree was added to the Standards of Practice in 2011 to assist actuaries in determining the appropriate course of action in response to an event.

To demonstrate the use of the event decision tree the educational note presents the following examples:

- Catastrophic event, such as Eastern Canada's January 1998 ice storm;
- Judicial decision, such as the February 2008 Alberta court decision related to the 2004 automobile reforms;
- Failure of a reinsurance company from the ceding company's perspective;
- Change in investment markets;
- Knowledge of missing claims;
- Late reported claim(s); and
- Change in insurance industry benchmarks.

The final section of this educational note focuses on communication between the actuary, company management, and the auditor at the company level as well as between our organizations at the profession level (i.e., CIA and CPA Canada). The pertinent sections of the Standards of Practice and the CPA Canada *Handbook – Accounting* are reproduced as appendices A and B, respectively.

## 2. Definitions and Standards of Practice

Subsection 1110 of the Standards of Practice defines a subsequent event as "an event of which an actuary first becomes aware after a calculation date but before the corresponding report date." The calculation date is defined as the "effective date of a calculation; e.g., the balance sheet date in the case of a valuation for financial statements. It usually differs from the report date." The report date is defined as the "date on which the actuary completes the report on his or her work. It usually differs from the calculation date." Finally, the term "report" refers to "an actuary's oral or written communication to users about his or her work."

Subsection 1520 of the Standards of Practice provides guidance regarding the possible effect of subsequent events on the work of actuaries. Paragraph 1520.02 states that

> . . . the actuary should take a subsequent event into account (other than in a pro forma calculation) if the subsequent event
>
> > provides information about the entity as it was at the calculation date,
> >
> > retroactively makes the entity different at the calculation date, or
> >
> > makes the entity different after the calculation date and a purpose of the work is to report on the entity as it will be as a result of the event.

Since the scope of this educational note is limited to actuarial analyses supporting financial reporting, particularly in the context of annual and quarterly financial statements, the discussion focuses on the first two circumstances in the above list.

The *CPA Canada Handbook – Accounting*, Part 1 IFRS, IAS 10 *Events After the Reporting Period*, states:

> Objective
>
> 1 The objective of this Standard is to prescribe:
>
> > (a) when an entity should adjust its financial statements for events after the reporting period; and
> >
> > (b) the disclosures that an entity should give about the date when the financial statements were authorised for issue and about events after the reporting period.
>
> The Standard also requires that an entity should not prepare its financial statements on a going concern basis if events after the reporting period indicate that the going concern assumption is not appropriate.

Scope

2 This Standard shall be applied in the accounting for, and disclosure of, events after the reporting period.

Definitions

3 The following terms are used in this Standard with the meanings specified:

*Events after the reporting period* are those events, favourable and unfavourable, that occur between the end of the reporting period and the date when the financial statements are authorised for issue. Two types of events can be identified:

(a) those that provide evidence of conditions that existed at the end of the reporting period (*adjusting events after the reporting period*); and

(b) those that are indicative of conditions that arose after the reporting period (*non-adjusting events after the reporting period*).

4 The process involved in authorising the financial statements for issue will vary depending upon the management structure, statutory requirements and procedures followed in preparing and finalising the financial statements.

5 In some cases, an entity is required to submit its financial statements to its shareholders for approval after the financial statements have been issued. In such cases, the financial statements are authorised for issue on the date of issue, not the date when shareholders approve the financial statements . . .

6 In some cases, the management of an entity is required to issue its financial statements to a supervisory board (made up solely of non executives) for approval. In such cases, the financial statements are authorised for issue when the management authorises them for issue to the supervisory board . . .

7 Events after the reporting period include all events up to the date when the financial statements are authorised for issue, even if those events occur after the public announcement of profit or of other selected financial information.

**Note that the "reporting date" in the accounting standards is equivalent to the "calculation date" in the Standards of Practice (and not the "report date").**

Under IFRS, the financial statements now disclose the date the financial statements were authorized for issuance by the entity (typically the date of approval by the Board) and the auditor's report date will match that date. The actuary's report date in the financial statements would typically be the same date.

Throughout this educational note, subsequent events are referred to as adjusting events or non-adjusting events according to the descriptions in IAS 10 *Events After the Reporting Period*, paragraphs 03 a) and b), respectively. In general, accounting standards require that an entity adjusts amounts recognized in its financial statements to take into account adjusting (subsequent) events and that the notes to the financial statements include disclosure of non-adjusting (subsequent) events.

The accounting treatment of adjusting events requires that "an entity shall adjust the amounts recognised in its financial statements to reflect adjusting events after the reporting period" (IAS 10, paragraph 8). For non-adjusting events, the accounting treatment states that

> If non-adjusting events after the reporting period are material, non-disclosure could influence the economic decisions that users make on the basis of the financial statements. Accordingly, an entity shall disclose the following for each material category of non-adjusting event after the reporting period:
>
> (a) the nature of the event; and
>
> (b) an estimate of its financial effect, or a statement that such an estimate cannot be made. (IAS 10, paragraph 21).

The actuarial classification is similar to the accounting classification. Paragraph 1520.05 of the Standards of Practice states:

> . . . depending on the classification, the actuary would either
>
> take that event into account, or
>
> report that event, but not take it into account.

These two options for action are similar to the accounting guidelines for adjusting (subsequent) events (i.e., take the event into account) and non-adjusting (subsequent) events (i.e., disclosure only). Furthermore, paragraph 1520.03 states that "The actuary should not take the subsequent event into account if it makes the entity different after the calculation date and a purpose of the work is to report on the entity as it was at the calculation date. Nevertheless, the actuary should report that subsequent event." This is similar to the accounting requirement for non-adjusting events.

An event decision tree was added in 2011 to the Standards of Practice to assist the actuary in deciding how to reflect an event in the work, if the actuary determines that the event makes the entity different. In a financial reporting context, the event decision tree can be used to determine whether to take the event into account or to report (i.e., disclose) the event but not to take it into account. When working with the event decision tree, it is critical that the actuary keep in mind the concept of materiality.

## 3. Materiality

Paragraph 1340.03 of the Standards of Practice addresses the concept of materiality, in a general fashion, by stating that "an omission, understatement, or overstatement is material if the actuary expects it materially to affect either the user's decision making or the user's reasonable expectations."

As part of an actuarial valuation of insurance contract liabilities, the actuary would determine a materiality level. The November 2007 report from the Task Force on Materiality notes that it is important to recognize what materiality is not. The report emphasizes that the concept of materiality is different from the concepts of:

- The range of reasonable values in an actuarial estimate; and

- The inherent uncertainty associated with actuarial estimates.

Subsection 1630 of the Standards of Practice, CIA/CICA Joint Policy Statement, requires communication regarding the materiality level between the actuary and the auditor. Paragraph 1630.10 states, in part:

> The enquiring professional would
>
> e) make the responding professional aware of the enquiring professional's needs. This would include a discussion of:
>
> i) the application of the concept of materiality to determine that the responding professional will be using a materiality level that is appropriate in relation to the enquiring professional's materiality level in accordance with applicable professional standards . . .

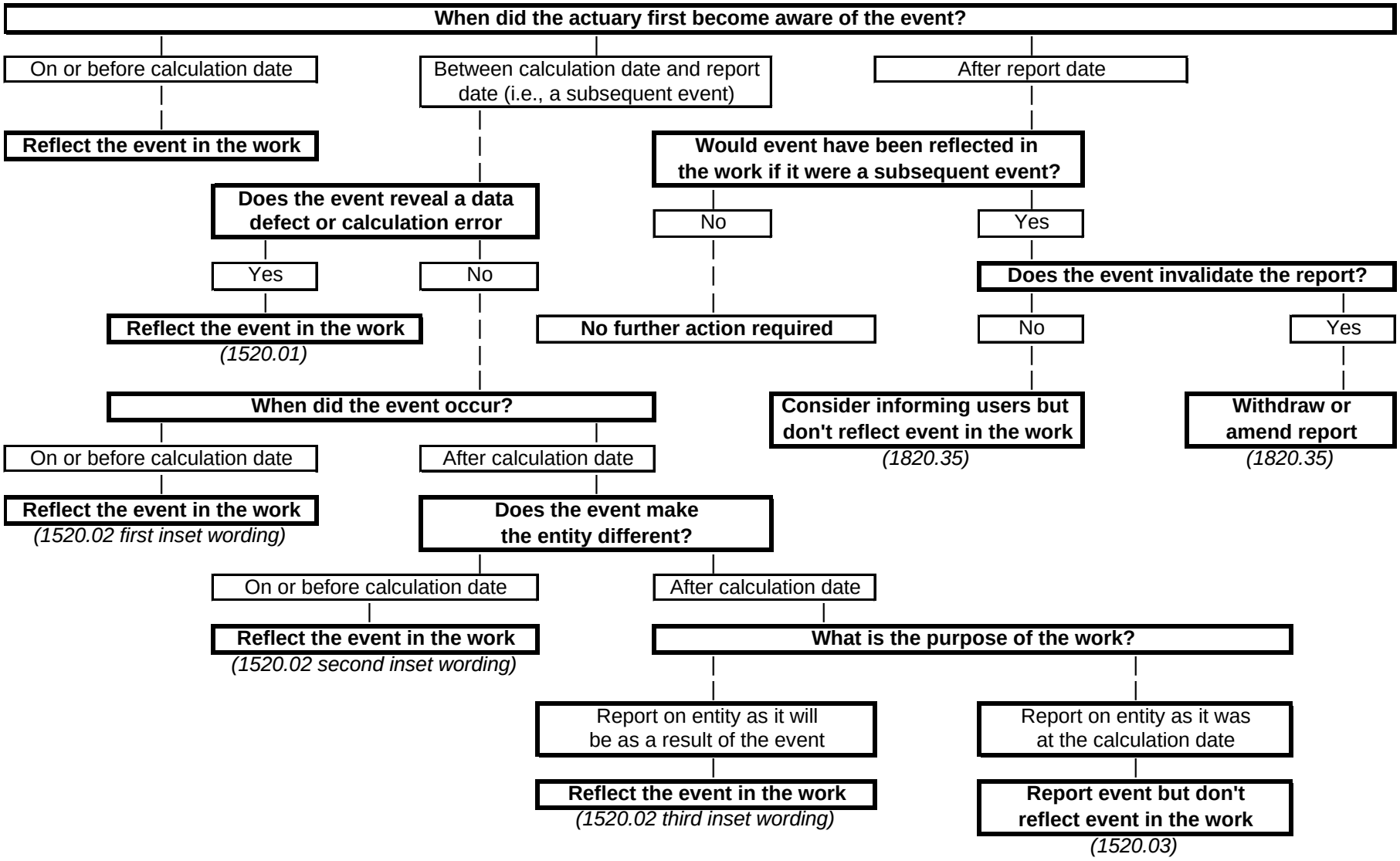
While the actuarial materiality may differ from the materiality level selected by the auditor, the actuary would be aware of the audit materiality level. Generally, the materiality level selected by the actuary for the purpose of actuarial analysis in support of financial reporting would not be greater than the materiality level selected by the auditor.

From an auditor's perspective, an adjusting event that is not material does not have to be reflected and a non-adjusting event that is not material does not require disclosure. If the actuary determines that an event is not material to the actuarial valuation of insurance contract liabilities, the actuary may not need to use the event decision tree. Nevertheless, the actuary would communicate to the auditor the details of such events since the auditor maintains various materiality thresholds. While actuarial standards may not require the actuary to change his or her analysis, the auditor may nevertheless have to consider the effect of the event.

## 4. Event Decision Tree

The next page presents the event decision tree from the Standards of Practice for determining the appropriate course of action in respect of a potential subsequent event. Actuaries may use this decision tree in the analysis of subsequent events for both claim liabilities and premium liabilities. As noted previously, when working with the event decision tree, it is critical that the actuary keep in mind the concept of materiality.

# EVENT DECISION TREE



Upon discovery of a potential subsequent event, the first question that the actuary would consider is when he or she obtained knowledge of the event.

### 4.1. Knowledge On or Before Calculation Date

According to the Standards of Practice, a subsequent event is an event of which an actuary first becomes aware after a calculation date but before the corresponding report date. Thus, if the actuary becomes aware of the event on or before the calculation date, the event is not a subsequent event and the actuary treats the event similarly to other information used in the valuation process.

### 4.2 Knowledge Between Calculation Date and Report Date

Events that occur between the calculation date and the report date are, by definition, subsequent events. If the actuary becomes aware of the subsequent event between the calculation date and the report date, the next question along the event decision tree is whether or not the event reveals a data defect or calculation error.

#### 4.2.1 Data Defect or Calculation Error

Errors can arise in the data provided by the insurer for the analysis or in the actuary's assumptions, calculations, and/or methodology. It is important to remember that the actuary's judgment about materiality pervades virtually all work and affects the actuary's decisions at all steps of the decision-making. If it is determined that the event exceeds the actuary's materiality level and is the result of an error, then the actuary would make the appropriate correction (i.e., reflect the event in the work) and communicate the revised insurance contract liabilities estimate to both management of the insurer and the auditor. Correction and communication of a data defect or calculation error is required regardless of whether the error was discovered before or after the report date.

Paragraph 1520.01 of the Standards of Practice states, "The actuary should correct any data defect or calculation error that is revealed by a subsequent event." As part of the Classification portion of subsection 1520, the Standards of Practice reiterates that it is the actuary's responsibility to correct errors. Paragraph 1520.05 states, "The actuary would correct an error revealed by a subsequent event. The actuary would classify each subsequent event other than those which reveal errors . . ."

#### 4.2.2 No Data Defect or Calculation Error

If the subsequent event does not reveal a data defect or calculation error, the next question the actuary asks is, "When did the event occur?"

##### 4.2.2.1 On or Before the Calculation Date

The action to this branch of the event decision tree is similar to that described in section 4.1. The event is not classified as a subsequent event, and the actuary treats the event similarly to other information used in the valuation process.

#### 4.2.2.2 After Calculation Date

If the event occurred after the calculation date, then the next question is related to the timing of when the entity becomes different. The two options in the event decision tree are: (1) on or before calculation date, and (2) after calculation date.

The response to this question is linked to the auditors' classification of an event as an adjusting event or a non-adjusting event.

Adjusting (subsequent) events, which the accounting standards define as events that provide evidence of conditions that existed at the end of the reporting period, require the actuary to recalculate the insurance contract liabilities, both claim liabilities and premium liabilities, at the calculation date. In the context of the decision tree, these events would therefore be ones that make the entity different on or before calculation date. The actuary would then report the recalculated insurance contract liabilities to management and the auditor for incorporation into the financial statements.

Non-adjusting (subsequent) events, which the accounting standards define as events that are indicative of conditions that arose after the reporting period, require disclosure rather than change to the balance sheet and income statement. In the context of the decision tree these events make the entity different after the calculation date and the purpose of the work is to report on the entity as it was at the calculation date. The actuary would nevertheless recalculate the insurance contract liabilities so that management can include appropriate values in the necessary disclosures; however, the insurance contract liabilities reported in the financial statements would remain unchanged.

In conclusion, if the event makes the entity different on or before the calculation date, then the actuary reflects the event in his or her work. If the event makes the entity different after the calculation date, then in the context of financial reporting, a disclosure in the financial statement would be required.

As mentioned previously in section 2, the scope of this educational note is limited to actuarial analysis supporting financial reporting and therefore does not address subsequent events which make the entity different after the calculation date and where the purpose of the work is to report on the entity as it will be as a result of the event.

### 4.3 After Report Date

If the actuary becomes aware of the event following the report date, the event, by definition, is not a subsequent event. Nevertheless, the event could trigger three possible actions depending on the type of event and the magnitude of the effect of the event. The actuary may: (1) take no action, (2) inform users but not change the work, or (3) withdraw or amend the report.

The first question the actuary asks upon discovering an event after the report date is, "Would the event have been reflected in the work if it were a subsequent event?" If the answer to this question is no, then no further action is required by the actuary. If the answer is yes, the actuary considers whether or not the event invalidates the report. To invalidate the report, the event would either reveal a data defect or a calculation error, provide additional information about the entity which is the subject of the report as that entity was at the calculation date, retroactively make that entity different at the calculation date, or make that entity different

after the calculation date and a purpose of the work was to report on the entity as it would be as a result of the information. If the event does not invalidate the report, then the actuary would consider informing the user(s) but does not have an obligation to reflect the event in the work. For purposes of actuarial work that supports financial reporting, the auditor would expect to be informed by the actuary, particularly since the auditor would need independently to evaluate the effect of the event on the audit opinion. If the event does invalidate the actuary's report, then the actuary would withdraw or amend his or her report.

## 5. Disclosure Requirements

Company management is ultimately responsible for the notes to the financial statements. However, following a non-adjusting (subsequent) event, the actuary often plays an important role in determining the estimates of insurance contract liabilities that are contained in such notes.

The actuary's responsibility for disclosure with respect to subsequent events, both adjusting events and non-adjusting events, extends beyond simply the financial statements. Depending on the circumstances of the subsequent event, the actuary has varied means of communication. The actuary may present his or her findings orally through meetings with company management and/or presentations to the audit committee or the board of directors. The actuary would also include commentary regarding the subsequent event in written communication either in the actuary's report or separate communication specifically addressing the subsequent event.

The February 1998 CIA educational note The Eastern Canada Ice Storm – Treatment in Financial Reporting included the following points for consideration for actuarial disclosure:

- A description of the nature of the event; and
- An estimate of the financial effect, when possible, or a statement that such an estimate cannot be made, including:
  - An estimate of the gross amount of claims (indemnities and loss adjustment expenses);
  - An estimate of the reinsurance recoveries;
  - An estimate of the reinsurance reinstatement premiums; and
  - A discussion about the impact of the event
    - On future insurance results of the entity;
    - On reinsurance risk of non-recovery from reinsurers; and
    - Other related events.

## 6. Examples

In order to illustrate the concepts described above, the following examples are analyzed using the event decision tree:

- Catastrophic event, such as Eastern Canada's January 1998 ice storm;
- Judicial decision, such as the February 2008 Alberta court decision related to the 2004 automobile reforms;

- Failure of a reinsurance company from a ceding company's perspective;
- Change in investment markets;
- Knowledge of missing claims;
- Late reported claim(s);
- Change in incurred value of a large loss; and
- Change in insurance industry benchmarks.

These examples are for illustrative purposes only. This list is not meant to be exhaustive. It is important to recognize that other types of subsequent events could affect insurance contract liabilities. The course of action following an actual event will depend on each insurer's circumstances and the particular characteristics of the event itself. Unless stated otherwise in each example, the event is considered to be material to the insurer.

### 6.1 Catastrophic Event

The first example refers to the January 1998 ice storm in Eastern Canada. Depending on the geographical distribution of exposures, the financial effects of the ice storm may or may not have been material to a particular insurer. For many insurers with exposures in Eastern Canada, the financial effect of the ice storm was greater than the selected actuarial materiality level for the December 31, 1997, insurance contract liabilities valuation.

*When did the actuary first become aware of the event?*

The actuary would compare the date he or she became aware of the event to the calculation date. For this example, the calculation date for most insurers was December 31, 1997. The ice storm did not begin until January 5, 1998; therefore, actuaries did not know of the event before the calculation date (i.e., December 31, 1997). Since the ice storm occurred so early in January, for most actuaries knowledge of the event developed before the report date. Thus, the actuary proceeds along the middle branch of the event decision tree.

*Does the event reveal a data defect or calculation error?*

For the ice storm, the answer to this question is no.

*When did the event occur?*

The ice storm did not begin until January 5, 1998, which was after the calculation date of December 31, 1997.

*Does the event make the entity different?*

In February 1998, the CIA published an educational note titled The Eastern Canada Ice Storm – Treatment in Financial Reporting to provide guidance on the reporting of this event. The educational note concluded that:

> The ice storm clearly does not retroactively make the insurance company different . . . Accordingly, the ice storm is an event that makes an entity different after the balance sheet date.

*What is the purpose of the work?*

The educational note concluded that

> If the purpose is to report on the entity as it was, then the actuary would not take the event into account in the selection of methods and assumptions . . .
>
> the actuary should report the event, making no further distinction on the nature and amount of the event, once the materiality hurdle has been passed, and it has been determined that it is not appropriate to amend methods and assumptions.

Both actuarial and accounting guidance are consistent in indicating that the appropriate course of action is to disclose the effect of the ice storm in the notes to the financial statements, but to make no changes to the calculations underlying the 1997 results.

The educational note also addressed the issue of premium liability.

> It is clear that the actual premium liability will likely be larger than the premium liability anticipated as at December 31, 1997. However, this is not the key issue in the context of financial reporting under GAAP. The key issue is the purpose of the work, which is to report on the insurance company as it was on December 31, 1997.

### 6.2 Judicial Decision

This example uses the 2008 judicial decision related to automobile insurance reforms in Alberta. In February 2008, Alberta's Court of Queen's Bench struck down the $4,000 cap on non-pecuniary damages for people who suffer soft-tissue injuries in car accidents.

For insurers doing business in Canada but without a significant portfolio of Alberta automobile insurance, the court decision was not material and no action was required. For some insurers with significant exposures in Alberta, the court decision was still not material due to the methods for setting individual case reserves, the proportion of bodily injury claims in their current portfolio of outstanding claims, or because a provision had already been established. Even if there were no changes in actuarial calculations, many auditors required an affirmative statement from the actuary regarding the non-material impact of the Alberta court decision. For many insurers, however, the effect of the court decision was greater than the actuarial materiality level.

In certain circumstances, the question of materiality may lead the actuary to conclude that no action is required according to the Standards of Practice, but significant industry-wide events may, in practice, require the actuary to provide a statement for financial reporting purposes regardless of materiality. This statement may require a quantification of the effect on the insurance contract liabilities or a disclosure in the notes to financial statements.

*When did the actuary first become aware of the event?*

For most insurers, the calculation date in this example was December 31, 2007. Thus, since the court decision occurred on February 8, 2008, the answer to the first question is that actuaries became aware of the event after the calculation date.

Unlike the Eastern Canada ice storm, the court decision occurred in early February, not early January. Some insurers had already held their audit committee meetings. Some actuaries had already prepared their actuarial statements of opinion regarding insurance contract liabilities even though their actuarial report on insurance contract liabilities had not yet been issued.

There was extensive discussion between actuaries and auditors, both at the individual company level and at the industry level, as to what constitutes a report date. Is the report date the date of:

- The audit committee meeting to approve the financial statements;
- The actuarial statement of opinion;
- The actuarial report; or
- The auditor's report on the financial statements (auditor's report date)?

The general consensus of the auditors was that the report date was the date of the auditor's report on the financial statements. According to the Standards of Practice, the actuarial report date is defined as the "date on which the actuary completes the report on his or her work." There may be situations, such as Canadian branches, where the actuary's report date is prior to the auditor's report date. In the unusual circumstance of a significant event occurring after the actuary's report date and before the auditor's report date, the actuary and auditor will be expected to coordinate and decide upon necessary action.

*Between Calculation Date and Report Date*

Actuaries who became aware of the court decision prior to the report date would proceed along the middle branch of the event decision tree. The Alberta court decision was not related to a data defect or calculation error. Since the event occurred after the calculation date, the next question for the actuary who became aware of the court decision prior to the report date would be, "Does the event make the entity different?" While the conclusions were not consistent among all auditing firms and all insurers, most classified the Alberta court decision as an adjusting event, an event that provided further evidence of conditions that existed at the December 31, 2007 financial statement date. For an adjusting (subsequent) event, the actuary would take into account the effect of such an event in the calculation of the insurance contract liabilities at the calculation date. The accounting classification as an adjusting event aligns with the event decision tree branch "the event makes the entity different on or before calculation date."

*After Report Date*

For actuaries who became aware of the Alberta court decision after the report date, the event is not classified as a subsequent event (according to paragraph 1110.49 of the Standards of Practice). They would answer the question: "Would the event have been reflected in the work if it were a subsequent event?" The answer to this question typically was yes. Thus, the final decision for actuaries was whether or not the event invalidated the report.

For some insurers with significant exposures in Alberta, the court decision did, in fact, invalidate the report. In these situations, actuaries had the option of withdrawing the December 31, 2007, insurance contract liabilities valuation report or amending it. For other insurers without a significant portfolio of Alberta automobile insurance, the court decision was not sufficiently material to invalidate the report. Therefore, many actuaries informed users in the financial notes but did not reflect the event in their work. The decision-making process was based on discussions between the actuary, the company management, and the auditor and depended upon the specific circumstances of each company.

### 6.3 Failure of a Reinsurance Company from the Ceding Company's Perspective

The failure of an insurer's reinsurer is cited in subsection 1520, Subsequent Events, of the Standards of Practice as an example of a situation where the classification is not clear. Paragraph 1520.16 states:

> If the insolvency was the culmination of a gradual deterioration in the reinsurer's financial circumstances, most of which had occurred before the calculation date but which was not apparent until revealed by the insolvency, then the insolvency provides information about the entity as it was at the calculation date. If the insolvency was precipitated by a catastrophe, then it provides information about a change in conditions which makes the entity different after the calculation date.

The example in this educational note assumes that the failure of the reinsurer is not due to the occurrence of a catastrophe but instead the gradual deterioration in the entity's financial condition.

*When did the actuary first become aware of the event?*

This example assumes that the actuary becomes aware of the failure on January 15, which is after the calculation date of December 31 but before the report date. Thus, by definition the failure of the reinsurer is a subsequent event. Given that the actuary becomes aware of the event between the calculation date and the report date, the actuary uses the middle branch of the event decision tree.

*Does the event reveal a data defect or calculation error?*

The failure of the reinsurer is not considered an error in data, assumptions, calculations, and/or methodology.

*When did the event occur?*

Assume that the failure of the reinsurer occurred during the first week of January, which is after the calculation date of December 31. (Note, if the assumption was that the reinsurer failure occurred during the last week of December, the actuary would not treat the failure as a subsequent event and would incorporate the effect of the failure into his or her analysis.)

*Does the event make the entity different?*

This question is likely the most challenging for the actuary to answer. The response to this question determines whether or not the effect of the event is to be reflected in the work (i.e., included in the calculations of insurance contract liabilities) or only reported (i.e., included in disclosure). The response to this question determines whether the event is an adjusting or a non-adjusting (subsequent) event as defined by Canadian accounting standards.

Based on a review of the excerpt from the Standards of Practice initially cited in this example as well as the CPA Canada definition of an adjusting event, i.e., an event that provides evidence of conditions that existed at the end of the reporting period, the failure of the reinsurer is classified as an adjusting event and is taken into account in the insurance contract liabilities valuation by the actuary. The actuary would work in concert with the insurance company financial management as well as with the auditor to confirm the response to this final question.

### 6.4 Change in Investment Markets

This example assumes a precipitate drop in the stock market that occurs during the first week of January along with a reduction in fixed income yields. Paragraph 1520.16 of the Standards of Practice also cites this example as a situation in which the classification is not clear. It states, in part:

> For financial reporting, one can argue that the stock market crash provides additional information about the entity as it was at the calculation date, because the crash is an indicator of the outlook for common share investments at that date; alternatively, one can argue that the crash makes the entity different only after the calculation date since it creates a new situation. The new situation would be reflected in the financial statements for the subsequent accounting period.

Different actuaries could come to different conclusions. When the situation is unclear, we suggest that the actuary discuss the issue with the auditor for further guidance.

*When did the actuary first become aware of the event?*

The drop in the stock market and investment yields occurs during the first week of January, which is after the calculation date of December 31. Since the change in the investment environment occurred in the first week of January, the assumption is that the actuary became aware of the event before the report date. The change in investment markets is considered a subsequent event since the actuary became aware of the event after the calculation date and before the report date. The actuary once again uses the middle branch of the event decision tree to determine whether and how to reflect the event in his or her work.

*Does the event reveal a data defect or calculation error?*

The drop in the stock market and investment yields is not an error in data, assumptions, calculations, and/or methodology.

*When did the event occur?*

The drop in the stock market and investment yields occurs during the first week of January, which is after the calculation date of December 31.

*Does the event make the entity different?*

As noted in the previous example, this last question represents one of the most challenging questions for the actuary. The CPA Canada standards define non-adjusting events as those events that are indicative of conditions that arose after the reporting period. Paragraph 11 of the *CPA Canada Handbook – Accounting*, Part 1 IFRS, IAS 10 *Events After the Reporting Period*, states:

> An example of a non-adjusting event after the reporting period is a decline in fair value of investments between the end of the reporting period and the date when the financial statements are authorised for issue. The decline in fair value does not normally relate to the condition of the investments at the end of the reporting period, but reflects circumstances that have arisen subsequently. Therefore, an entity does not adjust the amounts recognised in its financial statements for the investments. Similarly, the entity does not update the

amounts disclosed for the investments as at the end of the reporting period, although it may need to give additional disclosure under paragraph 21.

The appropriate course of action, according to CPA Canada standards, is to disclose the effect of the decline in fair value of the investments but not to take account of the event in the calculation of insurance contract liabilities as at December 31.

### 6.5 Knowledge of Missing Claims

This example assumes that the actuary receives notice on August 5 that the June 30 claims database, which the actuary is using to perform a second-quarter insurance contract liabilities valuation, does not include data from a particular group of claims.

*When did the actuary first become aware of the event?*

August 5 (the date on which the actuary was informed of the missing claims) is after the calculation date of June 30 but before the report date. Thus, this example initially proceeds down the middle branch of the event decision tree.

*Does the event reveal a data defect or calculation error?*

This event represents an omission (i.e., an error) in the data provided by the insurer. Since the answer to this question is yes, there is only one course of action: a corrected analysis. As stated in paragraph 1520.01 of the Standards of Practice, "The actuary should correct any data defect or calculation error that is revealed by a subsequent event."

It is important for the actuary to recognize that an error in data, assumptions, calculations, and/or methodology that is greater than the materiality level requires correction, even if correcting the error yields an estimate that is still within the range of reasonable values of the auditor.

*Lack of Clarity in What Constitutes the Event*

In this example, it is unclear whether the event is the late notice of the missing claims, which occurred in August (between June 30 calculation date and report date), or the actual claims themselves which occurred prior to the calculation date of June 30. The conclusion that the data is to be incorporated into the June 30 analysis is reached regardless of whether the actuary proceeds down the first or second branch of the event decision tree. If the event refers to the dates of the missing claims that occurred before the calculation date, then according to the event decision tree, the missing data are not treated as a subsequent event and the claims data are incorporated into the analysis. If the event refers to the actuary's knowledge of the missing claims, the actuary proceeds along the middle branch and responds affirmatively to the question about a data defect or calculation error.

If the omission of data is discovered on August 16, which is usually after the report date, the event is not classified as a subsequent event and the actuary would proceed down the third branch of the event decision tree. The actuary would answer the question: "Would the event have been reflected in the work if it were a subsequent event?" The answer to this question is typically yes. The final decision would be whether or not the event invalidated the report. As stated in paragraph 1820.33 of the Standards of Practice, the report would be invalidated if the

event reveals a data defect or a calculation error. This event represents a data defect and thus the report would be invalidated.

### 6.6 Late Reported Claim(s)

Lags in reporting of claims activity often occur for reinsurers. Several weeks, and sometimes months, can elapse between the time the ceding company increases a case reserve and the excess notice is received by the reinsurer. This example assumes that for year-end reserving purposes, the reinsurer's actuary relies on all notices received by December 29 from its ceding companies. Furthermore, it is assumed that the reinsurer receives notice on January 12 of a November 20 increase in case reserve from a three-year old claim that now exceeds the primary retention by more than $10 million.

*When did the actuary first become aware of the event?*

The actuary became aware of the event on January 12, which is after the calculation date of December 31 but before the report date. Thus, by definition this is a subsequent event.

*Does the event reveal a data defect or calculation error?*

It is important to recognize that the late reported claim in this example differs from the missing claims in the previous example. The late reported claim of the reinsurer is not classified as an error. Reinsurers routinely rely on data as of December 31 and receive updated claims information from brokers or ceding companies on new claims or case reserve changes occurring in December in early to mid-January. Thus, this example differs from the group of claims that were inadvertently excluded from the claims database in the missing claims example.

*When did the event occur?*

The increase in case reserve occurred on November 20, which is before the calculation date of December 31. According to the event decision tree, since the event (i.e., the increase in case reserve) occurred before the calculation date, the actuary would reflect the event in the work.

If the increase in case reserve occurred in early January instead, this event would be a subsequent event that would have occurred after the calculation date. According to the event decision tree, the event would then be a non-adjusting subsequent event as it makes the entity different after the calculation date and the actuary would disclose its impact in the report.

### 6.7 Change in Incurred Value of a Large Loss

This example assumes that the actuary receives notice on February 5 that the previously reported losses experienced a large change in value (large loss event). The change in value was recorded in the insurance claims database in mid-January.

*When did the actuary first become aware of the event?*

February 5 (the date on which the actuary was informed of the change in incurred value) and mid-January (the date on which the incurred value was recorded in the claims database) are both after the calculation date of December 31 but before the report date. Thus, this example proceeds down the middle branch of the event decision tree.

*Does the event reveal a data defect or calculation error?*

Change in incurred value is not considered an error in data, assumptions, calculations, and/or methodology. It is part of the normal course of business of insurer.

*When did the event occur?*

The change in incurred value occurred after the calculation date of December 31. (Note, if the change in value was in the last week of December, the actuary would reflect the actual value in the contract liabilities valuation.)

*Does the event make the entity different?*

In this situation, the entity is different after the calculation date. Knowledge of the change in incurred value was only known and recorded after the calculation date of December 31.

The actuary would assess whether the change in incurred value of the large loss even though in excess of its standard of materiality is foreseen as normal in the course of business and whether the loss development component of its Incurred but Not Reported (IBNR) exceeds the change in incurred value. In situations where the IBNR is sufficient, the actuary would deem the event as part of the normal course of business and not disclose the impact in its actuary's report.

In an opposite situation when the IBNR would not be sufficient to absorb the change in incurred value of the large loss, the actuary may consider this event as a non-adjusting subsequent event and disclose the impact of its value in its report. Disclosure would also be communicated to the auditors.

It is also worth noting that the same conclusion would apply whether the change in incurred value of a large loss has a positive or a negative impact on the contract liabilities.

### 6.8 Change in Insurance Industry Benchmarks

Paragraph 1520.07 of the Standards of Practice states, in part:

> Examples of subsequent events that provide information about an entity as it was at the calculation date are
>
> > publication of an experience study which provides information for selection of assumptions . . .

This final example assumes that the actuary is working for a relatively new company that does not yet have a reliable, credible database for development of actuarial assumptions for reserving purposes. Thus, the actuary relies on insurance industry benchmark information for the selection of loss development patterns and expected loss ratios for this company. Furthermore, the example assumes that the industry's statistical agency releases new industry development data on July 15. In this situation, is the actuary required to analyze the new industry data for the purpose of conducting a June 30 reserve valuation, which the company uses for financial reporting purposes?

*When did the actuary first become aware of the event?*

July 15, the date at which the actuary became aware of the new industry data, is after the June 30 calculation date. Thus, the actuary proceeds down the middle branch of the event decision tree.

*Does the event reveal a data defect or calculation error?*

The release of new industry benchmarks is not considered a data defect or calculation error.

*When did the event occur?*

The event is the availability of new industry data. The new data became available July 15, which is after the June 30 calculation date.

*Does the event make the entity different?*

It is typically not expected that the release of new industry benchmarks would make the entity different. Generally, industry benchmark patterns, particularly loss development patterns, do not change dramatically from release to release. Since actuaries review the experience of multiple years when selecting benchmarks based on industry data, the addition of one year is not usually expected to change the actuary's assumptions drastically. However, if the industry data are used for the selection of trend rates or expected loss ratios, changes in industry experience could be more significant, and the effect on selected assumptions could be material. It is incumbent upon the actuary to verify that the new industry information would not have a material effect on the estimate of insurance contract liabilities for the company.

It is expected that in most circumstances, the actuary would conclude that the effect of the subsequent event is unlikely to be material. Thus, in most circumstances, the actuary would not be required to incorporate the latest industry data in his or her calculations on that basis.

## 7. Communication Between Actuaries, Company Management, and Auditors

Strong communication between the actuary, company management, and the auditor is critical, particularly with respect to subsequent events. Subsection 1630 of the Standards of Practice, CIA/CICA Joint Policy Statement, requires communication regarding subsequent events between the actuary and the auditor. Paragraph 1630.10 states, in part:

> The enquiring professional would:
>
> e) make the responding professional aware of the enquiring professional's needs. This would include a discussion of . . .
>
> ii) subsequent events, to determine that the responding professional understands how they are to be treated and that he or she will consider the effect of matters that come to his or her attention up to the date of his or her report.

Therefore, the actuary would review the treatment of subsequent events with the auditor as well as with company management and consider the specific circumstances of the insurance company to ensure that the treatment is appropriate for the entity and that the audit and actuarial approaches are consistent.

The November 2007 report from the CIA Task Force on Materiality states: "An important part of knowing the user in communications between the actuary and the auditor may also be to understand what constitutes a material subsequent event to the accountant user who is also the preparer of general purpose public financial statements."

Following a subsequent event that has the potential to affect many organizations in the insurance industry, the CIA and CPA Canada will also play a role in facilitating discussions and

decision making as to how to classify the event. Two examples of such events are the Eastern Canada ice storm in January 1998 and the Alberta court decision in February 2008. The discussions at the industry level, however, are not a substitute for discussion at the individual company level.

## Appendix A

## CIA Standards of Practice, 1520 Subsequent Events

.01 The actuary should correct any data defect or calculation error that is revealed by a subsequent event.

.02 For work with respect to an entity, the actuary should take a subsequent event into account (other than in a pro forma calculation) if the subsequent event

provides information about the entity as it was at the calculation date,

retroactively makes the entity different at the calculation date, or

makes the entity different after the calculation date and a purpose of the work is to report on the entity as it will be as a result of the event.

.03 The actuary should not take the subsequent event into account if it makes the entity different after the calculation date and a purpose of the work is to report on the entity as it was at the calculation date. Nevertheless, the actuary should report that subsequent event. [Effective December 1, 2002]

**Classification**

.04 A subsequent event is relevant to the recommendation if it reveals an error, provides information about the entity, or is a decision that makes the entity different.

.05 The actuary would correct an error revealed by a subsequent event. The actuary would classify each subsequent event other than those which reveal errors and, depending on the classification, the actuary would either

take that event into account, or

report that event, but not take it into account.

**Definitive and virtually definitive decisions**

.06 A definitive decision means a final and permanent decision that is not tentative, provisional, or unsettled. It would be evidenced by an amendment to a benefits plan, a collective bargaining agreement, a binding exchange of letters between two contracting parties, a court order, a legislative bill that has been proclaimed, or the like. A virtually definitive decision is one that is virtually certain to become definitive, but that lacks one or more formalities like ratification, due diligence, regulatory approval, third reading, royal assent, or proclamation. However, a decision that still involves discretion at an executive or administrative level is not virtually definitive.

**Entity**

.06.1 Examples of entities are

the pension plan, in the case of an actuary doing a valuation of a pension plan,

the block of annuity business, in the case of an actuary calculating the insurance contract liabilities for an insurance company's annuity business,

a combination of the pension plan and the member's specific data, in the case of the determination of a member's individual entitlement under a pension plan, and

the insurance company, in the case of an actuary valuing the insurance contract liabilities of an insurance company.

**Event provides information about entity as it was or retroactively makes entity different**

.07 Examples of subsequent events that provide information about an entity as it was at the calculation date are

publication of an experience study that provides information for selection of assumptions,

reporting to an insurer of a claim that was incurred on or before the balance sheet date, and

adoption of a pension plan amendment prior to the calculation date of which the actuary becomes aware after the calculation date.

.08 Repealed

.09 Repealed

.10 Examples of events that retroactively make the entity different at the calculation date are definitive or virtually definitive decisions, made after the calculation date but effective on or before the calculation date, to

wind-up a pension plan, partially or fully,

sell a portion of a participating employer's business and consequently to spin-off the corresponding members from the participating employer's pension plan,

amend the benefits of a pension plan,

transfer a portion of an insurer's policies to another insurer, or

invoke a judicial decision that nullifies or significantly modifies the law affecting insurance claims.

.11 If an event provides information about the entity as it was at the calculation date or provides information that retroactively makes the entity different at the calculation date, the effect of the subsequent event on the work is the same as if the actuary first became aware of the information on or before the calculation date and the actuary would not report the event as a subsequent event. That is, the actuary would report the event only to the extent that the event would have been reported had the actuary first become aware of the information before the calculation date.

.12 Repealed

**Event makes entity different after**

.13 If the subsequent event makes the entity different after the calculation date, then the purpose of the work determines whether or not the actuary takes the event into account.

.14 If the subsequent event makes the entity different after the calculation date and the purpose of the work is to report on the entity as it will be as a result of the event, then the actuary would take that event into account and would describe it in reporting.

.15 If the subsequent event makes the entity different after the calculation date and the purpose of the work is to report on the entity as it was at that date, then the actuary would not take that event into account but would report the event since it would affect the entity's future operations and the actuary's subsequent calculations.

**Classification not clear**

.16 The classification of a subsequent event may be unclear, at least a priori, although the circumstances of the case and the actuary's engagement may make it clear. The following are examples of such events.

a precipitous fall in the stock market. For financial reporting, one can argue that the stock market crash provides additional information about the entity as it was at the calculation date, because the crash is an indicator of the outlook for common share investments at that date; alternatively, one can argue that the crash makes the entity different only after the calculation date since it creates a new situation. The new situation would be reflected in the financial statements for the subsequent accounting period.

a salary freeze for employees who are members of a pension plan. If the salary freeze is a correction of excessive salaries, then it provides additional information about the entity as it was at the calculation date, because the freeze is an indicator of the outlook for salaries at the calculation date. If the salary freeze deals with a recent problem, then it indicates a change in conditions that makes the entity different after the calculation date. In either case, the actuary would consider the effect of the freeze on the employees' pension benefits. It may be that the freeze will have a lasting effect. Alternatively, it may be that the freeze will be compensated for by higher salaries later on, so that the salary inflation assumption based on historical trends continues to be valid.

default on a bond. If the default was the culmination of a gradual deterioration in its issuer's financial circumstances, most of which had occurred before the calculation date but which was not apparent until revealed by the default, then the default provides additional information about the entity as it was at the calculation date. If the default was precipitated by a catastrophe, then it provides information about a change in conditions that makes the entity different after the calculation date.

insolvency of an insurer's reinsurer. This is similar to default on a bond. If the insolvency was the culmination of a gradual deterioration in the reinsurer's financial circumstances, most of which had occurred before the calculation date but which was not apparent until revealed by the insolvency, then the insolvency provides information about the entity as it was at the calculation date. If the insolvency was precipitated by a catastrophe, then it provides information about a change in conditions that makes the entity different after the calculation date.

.17 Repealed

**Reporting**

.18 Sometimes the actuary may consider it appropriate, or the terms of the work may require the actuary, to report an alternative and opposite calculation; i.e., an alternative calculation that does not take the subsequent event into account when the main calculation does, or that takes the subsequent event into account when the main calculation does not. For example, in a province for which the calculation date for a pension valuation following marriage breakdown is the date of separation, a subsequent event may be the early retirement of the plan member at some time between the calculation date and the report date. The actuary would consider reporting values assuming that this subsequent event had been an established intention at the calculation date, instead of or in addition to retirement scenarios otherwise recommended in the practice-specific standards. In such cases, the actuary would make the same calculations regardless of the purpose of the work but the reporting thereof would depend on the purpose of the work.

## Appendix B

## *CPA Canada Handbook – Accounting*: IAS 10 Events After the Reporting Period

**Objective**

1 The objective of this Standard is to prescribe:

(a) when an entity should adjust its financial statements for events after the reporting period; and

(b) the disclosures that an entity should give about the date when the financial statements were authorised for issue and about events after the reporting period.

The Standard also requires that an entity should not prepare its financial statements on a going concern basis if events after the reporting period indicate that the going concern assumption is not appropriate.

**Scope**

2 **This Standard shall be applied in the accounting for, and disclosure of, events after the reporting period.**

**Definitions**

3 **The following terms are used in this Standard with the meanings specified:**

***Events after the reporting period* are those events, favourable and unfavourable, that occur between the end of the reporting period and the date when the financial statements are authorised for issue. Two types of events can be identified:**

**(a) those that provide evidence of conditions that existed at the end of the reporting period (*adjusting events after the reporting period*); and**

**(b) those that are indicative of conditions that arose after the reporting period (*non-adjusting events after the reporting period*).**

4 The process involved in authorising the financial statements for issue will vary depending upon the management structure, statutory requirements and procedures followed in preparing and finalising the financial statements.

5 In some cases, an entity is required to submit its financial statements to its shareholders for approval after the financial statements have been issued. In such cases, the financial statements are authorised for issue on the date of issue, not the date when shareholders approve the financial statements.

**Example**

The management of an entity completes draft financial statements for the year to 31 December 20X1 on 28 February 20X2. On 18 March 20X2, the board of directors reviews the financial statements and authorises them for issue. The entity announces its profit and selected other financial information on 19 March 20X2. The financial statements are made available to shareholders and others on 1 April 20X2. The shareholders approve the financial statements at

their annual meeting on 15 May 20X2 and the approved financial statements are then filed with a regulatory body on 17 May 20X2.

*The financial statements are authorised for issue on 18 March 20X2 (date of board authorisation for issue).*

6 In some cases, the management of an entity is required to issue its financial statements to a supervisory board (made up solely of non executives) for approval. In such cases, the financial statements are authorised for issue when the management authorises them for issue to the supervisory board.

**Example**

On 18 March 20X2, the management of an entity authorises financial statements for issue to its supervisory board. The supervisory board is made up solely of non-executives and may include representatives of employees and other outside interests. The supervisory board approves the financial statements on 26 March 20X2. The financial statements are made available to shareholders and others on 1 April 20X2. The shareholders approve the financial statements at their annual meeting on 15 May 20X2 and the financial statements are then filed with a regulatory body on 17 May 20X2.

*The financial statements are authorised for issue on 18 March 20X2 (date of management authorisation for issue to the supervisory board).*

7 Events after the reporting period include all events up to the date when the financial statements are authorised for issue, even if those events occur after the public announcement of profit or of other selected financial information.

**Recognition and measurement**

**Adjusting events after the reporting period**

8 **An entity shall adjust the amounts recognised in its financial statements to reflect adjusting events after the reporting period.**

9 The following are examples of adjusting events after the reporting period that require an entity to adjust the amounts recognised in its financial statements, or to recognise items that were not previously recognised:

(a) the settlement after the reporting period of a court case that confirms that the entity had a present obligation at the end of the reporting period. The entity adjusts any previously recognised provision related to this court case in accordance with IAS 37 *Provisions, Contingent Liabilities and Contingent Assets* or recognises a new provision. The entity does not merely disclose a contingent liability because the settlement provides additional evidence that would be considered in accordance with paragraph 16 of IAS 37.

(b) the receipt of information after the reporting period indicating that an asset was impaired at the end of the reporting period, or that the amount of a previously recognised impairment loss for that asset needs to be adjusted. For example:

(i) the bankruptcy of a customer that occurs after the reporting period usually confirms that a loss existed at the end of the reporting period on a trade receivable and that the entity needs to adjust the carrying amount of the trade receivable; and

(ii) the sale of inventories after the reporting period may give evidence about their net realisable value at the end of the reporting period.

(c) the determination after the reporting period of the cost of assets purchased, or the proceeds from assets sold, before the end of the reporting period.

(d) the determination after the reporting period of the amount of profit-sharing or bonus payments, if the entity had a present legal or constructive obligation at the end of the reporting period to make such payments as a result of events before that date (see IAS 19 *Employee Benefits*).

(e) the discovery of fraud or errors that show that the financial statements are incorrect.

**Non-adjusting events after the reporting period**

10 **An entity shall not adjust the amounts recognised in its financial statements to reflect non-adjusting events after the reporting period.**

11 An example of a non-adjusting event after the reporting period is a decline in fair value of investments between the end of the reporting period and the date when the financial statements are authorised for issue. The decline in fair value does not normally relate to the condition of the investments at the end of the reporting period, but reflects circumstances that have arisen subsequently. Therefore, an entity does not adjust the amounts recognised in its financial statements for the investments. Similarly, the entity does not update the amounts disclosed for the investments as at the end of the reporting period, although it may need to give additional disclosure under paragraph 21.

**Dividends**

12 **If an entity declares dividends to holders of equity instruments (as defined in IAS 32 *Financial Instruments: Presentation*) after the reporting period, the entity shall not recognise those dividends as a liability at the end of the reporting period.**

13 If dividends are declared after the reporting period but before the financial statements are authorised for issue, the dividends are not recognised as a liability at the end of the reporting period because no obligation exists at that time. Such dividends are disclosed in the notes in accordance with IAS 1 *Presentation of Financial Statements*.

**Going concern**

14 **An entity shall not prepare its financial statements on a going concern basis if management determines after the reporting period either that it intends to liquidate the entity or to cease trading, or that it has no realistic alternative but to do so.**

15 Deterioration in operating results and financial position after the reporting period may indicate a need to consider whether the going concern assumption is still appropriate. If the going concern assumption is no longer appropriate, the effect is so pervasive that this Standard

requires a fundamental change in the basis of accounting, rather than an adjustment to the amounts recognised within the original basis of accounting.

16 IAS 1 specifies required disclosures if:

(a) the financial statements are not prepared on a going concern basis; or

(b) management is aware of material uncertainties related to events or conditions that may cast significant doubt upon the entity's ability to continue as a going concern. The events or conditions requiring disclosure may arise after the reporting period.

**Disclosure**

**Date of authorisation for issue**

17 **An entity shall disclose the date when the financial statements were authorised for issue and who gave that authorisation. If the entity's owners or others have the power to amend the financial statements after issue, the entity shall disclose that fact.**

18 It is important for users to know when the financial statements were authorised for issue, because the financial statements do not reflect events after this date.

**Updating disclosure about conditions at the end of the reporting period**

19 **If an entity receives information after the reporting period about conditions that existed at the end of the reporting period, it shall update disclosures that relate to those conditions, in the light of the new information.**

20 In some cases, an entity needs to update the disclosures in its financial statements to reflect information received after the reporting period, even when the information does not affect the amounts that it recognises in its financial statements. One example of the need to update disclosures is when evidence becomes available after the reporting period about a contingent liability that existed at the end of the reporting period. In addition to considering whether it should recognise or change a provision under IAS 37, an entity updates its disclosures about the contingent liability in the light of that evidence.

**Non-adjusting events after the reporting period**

21 **If non-adjusting events after the reporting period are material, non-disclosure could influence the economic decisions that users make on the basis of the financial statements. Accordingly, an entity shall disclose the following for each material category of non-adjusting event after the reporting period:**

**(a) the nature of the event; and**

**(b) an estimate of its financial effect, or a statement that such an estimate cannot be made.**

22 The following are examples of non-adjusting events after the reporting period that would generally result in disclosure:

(a) a major business combination after the reporting period (IFRS 3 *Business Combinations* requires specific disclosures in such cases) or disposing of a major subsidiary;

(b) announcing a plan to discontinue an operation;

(c) major purchases of assets, classification of assets as held for sale in accordance with IFRS 5 *Non-current Assets Held for Sale and Discontinued Operations*, other disposals of assets, or expropriation of major assets by government;

(d) the destruction of a major production plant by a fire after the reporting period;

(e) announcing, or commencing the implementation of, a major restructuring (see IAS 37);

(f) major ordinary share transactions and potential ordinary share transactions after the reporting period (IAS 33 *Earnings per Share* requires an entity to disclose a description of such transactions, other than when such transactions involve capitalisation or bonus issues, share splits or reverse share splits all of which are required to be adjusted under IAS 33);

(g) abnormally large changes after the reporting period in asset prices or foreign exchange rates;

(h) changes in tax rates or tax laws enacted or announced after the reporting period that have a significant effect on current and deferred tax assets and liabilities (see IAS 12 *Income Taxes*);

(i) entering into significant commitments or contingent liabilities, for example, by issuing significant guarantees; and

(j) commencing major litigation arising solely out of events that occurred after the reporting period.

**Effective date**

23 An entity shall apply this Standard for annual periods beginning on or after 1 January 2005. Earlier application is encouraged. If an entity applies this Standard for a period beginning before 1 January 2005, it shall disclose that fact.

**Withdrawal of IAS 10 (revised 1999)**

24 This Standard supersedes IAS 10 *Events After the Balance Sheet Date* (revised in 1999).

Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

# *Report*

# Materiality

## Task Force on Materiality

**October 2007**

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Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

# Memorandum

**To:** All Fellows, Affiliates, Associates and Correspondents of the Canadian Institute of Actuaries

**From:** Jacques Tremblay, Chairperson
Practice Council

Jacqueline Friedland, Chairperson
Task Force on Materiality

**Date:** October 31, 2007

**Subject:** **Report – Materiality**

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This report was developed by the Task Force on Materiality of the Canadian Institute of Actuaries (CIA) for discretionary use by actuaries. Its purpose is to assist Canadian actuaries in considering various aspects of materiality as they provide professional services to their principals.

In accordance with the Institute's Policy on Due Process for Approval of Practice-Related Material other than Standards of Practice, this report has been unanimously approved by the Task Force on Materiality and has received final approval for distribution by the Practice Council on October 10, 2007.

If you have any questions or comments regarding this report, please contact Jacqueline Friedland at jfriedland@kpmg.ca.

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## 1. PREFACE

This report was developed by the Task Force on Materiality of the Canadian Institute of Actuaries (CIA) for discretionary use by actuaries. Its purpose is to assist Canadian actuaries in considering various aspects of materiality as they provide professional services to their principals. Concepts in this document are broadly applicable to actuaries conducting valuation, pricing, reserving and financial modeling analyses in all practice areas (including life, health, pension, and property/casualty).

This document serves as a first step in the development of Canadian-based literature on the topic. The last section of the document highlights issues that we believe are important for further research and discussion. The task force hopes to promote discussion of materiality within the entire Canadian actuarial profession. We are hopeful that, over time, such discussions might lead to the evolution of revised CIA Standards of Practice (SOP) and generally accepted practices regarding materiality in Canada.

Task force reports represent the views of the task force and do not necessarily represent the views of the CIA. Members should be familiar with task force reports. These reports do not constitute SOP and therefore are not binding. These reports may or may not be in compliance with SOP. Responsibility for the manner of application of SOP in specific circumstances remains that of the members in the various practice areas (i.e., life, health, pension, and property/casualty).

This document relies to a great extent on the American Academy of Actuaries (AAA) Discussion Paper titled "Materiality – Concepts on Professionalism" issued in 2006. We acknowledge the combined efforts of members of both the CIA and the AAA and their contributions to the research, analysis, and composition of this document. Members should note that the professional rules of the CIA differ from the corresponding codes of conduct of the AAA and that the differences might impose different professional obligations on the CIA member than on the AAA member.

The Task Force on Materiality presents these ideas with the expectation that they will be both useful and thought-provoking and will enhance the Canadian actuarial profession's consideration of aspects of materiality in professional practice. Ultimately, it is the SOP that governs the responsibilities of actuaries in this area. However, the ideas and suggestions offered in this document are intended to assist actuaries in applying the SOP to their individual situations. The task force believes that expanded discussion of the concepts and suggestions offered in this document will benefit the profession.

## 2. PURPOSE AND SCOPE

This document is intended to stimulate thinking and discussion about materiality in the CIA. The purpose is not only to build upon what exists in the current SOP and what has already occurred in the property/casualty practice area but also to extend the discussion into other practice areas. The task force hopes to promote discussion of materiality within the entire Canadian actuarial profession. We are hopeful that, over time, such discussions might lead to the evolution of revised SOP and generally accepted practices regarding materiality in Canada.

Concepts in this document are broadly applicable to all practice areas (including life, health, pension, property/casualty). The considerations set forth here also apply to all

actuarial work, including that done by actuaries employed by an insurance company or other entity, as well as by consulting actuaries in assignments for their clients.

By sharing the thoughts of several experienced actuaries, the task force encourages each actuary to give appropriate consideration to the concepts and suggestions contained in this document. Ultimately, however, each actuary must decide how to fulfill professional responsibilities in this area according to current SOP.

In this respect, CIA members should take note of the fact that the Rules of the CIA refer directly to the concept of what is *material* in Rule 13. Rule 13 states: "A member shall comply with the procedures set out in Annotation 13-1 if the member becomes aware of any apparent material noncompliance by another member with the Rules or with the standards of practice."

Much of the contents of this document relate to how the professional services of the CIA member are viewed by the users of professional services. Members should take note of their professional obligations under Rule 6 (Control of Work Product). Annotation 6-1 states: "Material prepared by a member may be used by another party in a way that may influence the actions of a third party. The member should recognize the risks of misquotation, misinterpretation or other misuse of such material and should take reasonable steps to ensure that the material is clear and presented fairly, and that the member is identified as the source of the material."

CIA members should also consider the onus placed on them by Annotation 1-2 which states that "It is the professional responsibility of the member not to be associated with anything which the member knows or should know is false or misleading." This document on materiality points out that it is the judgment of how information prepared by the actuary might affect the user's decision making or the user's reasonable expectations that is the key concept underlying materiality.

## 3. BACKGROUND

The concept of materiality is central to the reporting and interpretation of financial information. Loosely defined as "importance," the question of whether or not something is "material" means, quite literally, whether or not it matters to the **user** of the information. When related to financial information, the question of materiality arises in the context of inclusion (whether or not an item needs to be considered), in the context of refinement (whether or not a number is accurate enough to convey its intended message), and in the context of disclosure (whether or not a fact needs to be reported).

Accountants have long recognized the issue of materiality and its role in the reporting of financial information. They have defined the concept in both qualitative and quantitative terms, although judgment, by necessity, plays a significant role as well. However, while the concept of materiality is of no less importance to the actuary's work than it is to the accountant's, and while the term and related concepts are pervasive in the actuarial literature, there is very little professional guidance for the actuary seeking to evaluate what is and what is not material – what does and does not matter – in a particular situation.

Materiality is a critical element of financial reporting for insurance contracts, employee benefit plans, and other financial instruments for which actuaries provide professional

services. Actuaries' clients and employers, as well as other interested persons, may not always understand the differences between materiality from an accounting perspective, from their personal perspective, and materiality as it is understood and used by actuaries. Moreover, actuaries working in different practice areas may address materiality somewhat differently, and the guidance on materiality available to actuaries from organizations other than the CIA differs among the various practice areas.

Paragraph 1340.03 of the SOP, Materiality, states that ""Material" has its ordinary meaning, but judged from the point of view of a user, having regard for the purpose of the work." While there is a current SOP related to materiality, many members of the CIA have expressed an interest in further guidance on the topic.

The CIA determined that it would be helpful to develop a document offering non-binding guidance on materiality. Therefore, the CIA's Practice Council established the task force to prepare a document for broad dissemination to the membership. The purpose of the document is not to impose any new or revised requirements to the existing SOP, but to identify issues, enhance awareness, and assist actuaries and others toward a clearer understanding of the topics addressed in this document.

## 4. DEFINING MATERIALITY

Paragraph 1340.03 of the SOP contains the following generalized description of the concept of materiality:

> …an omission, understatement, or overstatement is material if the actuary expects it materially to affect either the user's decision making or the user's reasonable expectations.

Most descriptions of materiality emphasize that an omission or misstatement is material if the judgment of a *reasonable person* would have been changed or influenced by the inclusion or correction of the item, given *surrounding circumstances*.

The reader may find it helpful to keep this in mind when reading this document. Further discussion of the description of materiality appears in the next section, "Reflecting Upon Materiality: User is Key."

In understanding what materiality is, it is also important to recognize what materiality is not. The task force wishes to emphasize that the concept of materiality is different from the concepts of:

- the range of reasonable values in an actuarial estimate; and
- the inherent uncertainty associated with actuarial estimates.

Sources of discussion to which actuaries have access include:

- actuarial and accounting guidance from other countries and from International Standards on Auditing;
- Actuarial Standards of Practice (ASOP) of the American Academy of Actuaries (AAA);
- Canadian Institute of Chartered Accountants (CICA);
- Financial Accounting Standards Board (FASB);

- International Accounting Standards Board (IASB);
- National Association of Insurance Commissioners (NAIC) Financial Examiners' Handbook and Accounting Practices and Procedures Manual;
- Practice and Educational Notes of actuarial societies;
- Securities and Exchange Commission (SEC);
- US Federal and state courts;
- Valuation, Finance and Investment Committee (VFIC) of the Casualty Actuarial Society (CAS).

In the Appendix, we include a wide range of extracts from relevant literature to assist actuaries in their consideration of materiality.

Throughout this document, SOP refers to the Standards of Practice promulgated by the CIA, and ASOP refers to the Standards of Practice of the AAA. This document contains references to the Standards of Practice of both organizations due to the participation of members from both organizations in the research and development of the document.

## 5. REFLECTING UPON MATERIALITY: USER IS KEY

Subsection 1340 of the SOP provides a generalized description of "materiality." This document does not seek to propose a universal definition of materiality for actuarial purposes. We preferred to focus on applying judgment about materiality. We were somewhat startled at the strong emphasis of the Merriam-Webster OnLine dictionary's definition of "material - having real importance or great consequences" – and in particular the word "great." Upon reading this definition, one immediately responds "to whom?"

User perspective is typically the key element in materiality determinations. In applying judgment to determine how to address materiality, the actuary normally focuses on the purpose of the work and its intended user(s). The definitions in the Appendix at the end of this document collectively appear to send the message: "know your user." However, this is sometimes more difficult than it may seem, since it is quite common for actuarial work products to be used, in one way or another, by indirect users about whom the actuary cannot possibly be knowledgeable. Indeed, different users (including unintended users) may have different expectations regarding materiality.

In section 1800 of the SOP Reporting, the focus is on external user reports and internal user reports. The issue of intended and unintended users is not specifically addressed in the SOP. The ASOP 41 does address this specific issue. ASOP 41 states that the actuary is not responsible to unintended users with whom they did not intend to communicate. Notwithstanding the presence or absence of a specific SOP, actuaries may be found to retain some responsibility to assure that a report is not misused or misapplied by all users of the work product as stated in CIA Annotation 6-1 on Control of Work Product.

Having decided upon the selected materiality level for a particular assignment, the actuary might be well advised to test it by asking rhetorically "would my users come to a different conclusion or a different decision if I used some other materiality level?" Then

we immediately encounter the difficulty referred to above, i.e., the actuary cannot possibly be knowledgeable about all indirect users.

ASOP No. 41, *Actuarial Communications* provides an approach to resolve this difficulty. Section 2.5 thereof defines "intended audience" as "The persons to whom the actuarial communication is directed and with whom the actuary, *after discussion with the principal* (emphasis added), intends to communicate." The rest of the definition makes it clear that, unless otherwise agreed, the principal is always part of the intended audience, and gives examples of others (such as regulators, policyholders and plan participants) who may be designated by the principal, with consent of the actuary, as members of the intended audience.

Section 2.6 of ASOP No. 41 defines "other user" as "Any user of an actuarial communication who is not a principal or member of the intended audience." This framework provides valuable protection for the actuary, who is entitled to be in control at all times regarding the intended audience and therefore cannot be taken by surprise by the existence of "other users" about whom the actuary is ignorant. Note too that Section 3.5.2 of ASOP No. 41 provides that there is no obligation for the actuary to communicate with any person other than the intended audience. We recognize that ASOP are not binding on members of the CIA who are not also members of the AAA.

SOP Section 1800 Reporting requires the actuary to ensure that the form and content of the actuarial reporting are clear and appropriate to the particular circumstances. SOP paragraph1820.14 states: "Description of the purpose of the work and its users permits another person to assess its appropriateness to his or her needs and may thereby avoid unintended use of the work." Consequently, by taking due care as to who is included as part of the intended audience, the actuary is able to apply informed judgment in arriving at the selected materiality level. For example, if policyholders are included, then the actuary should have due regard of the fact that policyholders, in general, are likely to be less sophisticated than the actuary's principal, regulators or investors.

In summary, the actuary who prepares the work (the "preparer") is expected to take reasonable steps to ensure that the work does not mislead the intended users of the work. An evaluation of whether this threshold is met should consider: the intended users, their knowledge, and their situations. A clear statement by the preparer of both the intended users of the work product and the intended uses of the work product is a valuable tool to focus the attention of the preparer on what may be material.

## 6. CONSIDERATIONS IN THE DETERMINATION OF MATERIALITY

Paragraph 1340.02 states in part:

> Judgment about materiality pervades virtually all work and affects the application of nearly all standards.

The appropriate degree of rigor in establishing or communicating the selected materiality level for a particular assignment may vary depending upon the needs, skill, sophistication, and experience of the intended audience for the actuary's work. The Appendix at the end of this document contains numerous references as to how the selected materiality level might conceivably affect the user's decision-making or reasonable expectations.

Materiality tends to be more task-specific than practice-specific. For example, we expect there to be more similarities in applying judgment about materiality to valuation type work among the various practice areas (life, health, pension, property/casualty) than we would when applying such judgment to valuation type work and product/rate development work within the same practice area.

Perhaps understandably, in light of regulatory scrutiny and the sophistication of users of actuarial work involving policy liabilities valuations as well as mergers and acquisitions transactions, actuaries in Canada appear to have more experience in applying judgment about materiality in the context of valuation work (used here to include not only statement reserves and merger/acquisition work but also portfolio transfers) than has been the case when setting rates. Nevertheless, the concepts of materiality are also applicable in product/rate development work.

There currently exists a difference in practice among actuaries with respect to the establishment of single or multiple materiality levels. Some actuaries develop a separate materiality level for data that is generally much smaller than the materiality level for the organization in total. For example, an actuary may choose a $25,000 materiality level for data and a $5 million materiality level for the organization's total policy liabilities. The more common practice, however, is the selection of a single materiality level.

Returning to the user focus and the generalized description of materiality contained in subsection 1340 of the SOP, unless there are good reasons, an actuary would generally select one materiality level for a particular actuarial task or assignment, and there would not be separate materiality levels identified for data and the overall actuarial analysis. Although it may be appropriate to identify a separate "tolerance level" as a threshold for accuracy and completeness of data, this concept is separate from the matter of materiality and would not normally be referred to or labeled as a selected materiality level.

In the normal course of events, an actuary generally would not change the materiality level significantly from year to year or valuation to valuation. However, as an organization approaches a threshold or some external benchmark, an actuary may well choose to consider changing the approach or the degree of rigor applied when determining materiality. For example, if an insurance company is close to breaching regulatory action levels, many actuaries would agree that there are likely to be good grounds for changing the selected level of materiality.

In summary, when determining materiality, the user will want to keep in mind the following considerations frequently cited in discussions on materiality:

- The materiality level should be related to the purposes and intended uses of the work. The actuary should understand which financial values are usually important for the intended uses. For example:
    - For regulatory or solvency issues, the materiality level is typically related to statutory surplus or the solvency benchmark ratio;
    - For appraisal work, the materiality level is generally related to net worth, net income, or earnings per share;

    - For DCAT work, the materiality level is expected to be less rigorous than for valuation work;
    - For general purpose financial statement work, the materiality level is generally related both to net income and net capital (or net surplus);
    - Exclusive reliance on quantitative benchmarks is inappropriate. A quantitative rule-of-thumb may be a starting point, but it must be reviewed to take into account the purpose of the work and the individual entity's circumstances.
- The materiality level is also expected to vary according to other characteristics of the entity including but not limited to the:
    - Size of the entity;
    - Entity's access to capital;
    - Stage of organizational life cycle;
    - Type of business (e.g., multi-line vs. single line, personal lines vs. commercial lines);
    - Net retention.

The materiality level will also vary according to the financial strength of the entity. In particular, paragraph 1340.04 of the SOP states: "The standard of materiality for work involving a threshold…would become more rigorous as the entity approaches that threshold."

## 7. ACCOUNTING VS. ACTUARIAL MATERIALITY

As noted in the "Defining Materiality" section of this document, an actuary selects an appropriate materiality level based on his or her professional judgment as to the magnitude of an omission, understatement or overstatement that would cause the user to reach a different conclusion or follow a different course of action. An accountant or auditor working for the same entity would presumably base his or her selection of the materiality level on similar criteria. Some actuaries would argue that, at least in theory, the materiality level selected by the actuary would normally be close to that selected by the accountant or auditor given that the report was prepared for financial reporting purposes.

An important consideration for the "preparer" actuary to bear in mind might be that the "user" auditor is also a "preparer" of the general purpose financial statements. While the direct users of an appointed actuary's report might be relatively sophisticated regulatory and auditing professionals, the "preparer" actuary should also consider how the auditor might use the report in communicating with the ultimate, less sophisticated, general purpose financial statement user.

According to SOP subsection 1630 CIA/CICA Joint Policy Statement (effective October 1, 2007), communication regarding materiality is expected between the actuary and the auditor. Paragraph 1630.10(e) states:

> "The enquiring professional would:
>
> …make the responding professional aware of the enquiring professional's needs. This would include a discussion of:
>
> (i) the application of the concept of materiality to determine that the responding professional will be using a materiality level that is appropriate in relation to the enquiring professional's materiality level in accordance with applicable professional standards…"

As a practical matter, however, accountants and auditors may select a materiality level without first communicating with the actuary. For example, auditors of an insurance company attest to the existence and value of assets on the one hand (large numbers that are usually comparable with reserves, at least in the aggregate) and premium data and expenses on the other (which, by contrast, tend to be relatively smaller numbers, especially at the policy or contract level). Auditors may not always use the same materiality level when making these two attestations.

Good communication between the actuary and the auditor (for which specific guidance is offered in SOP Sections 1620 Auditor's Use of an Actuary's Work and 1630 CIA/CICA Joint Policy Statement) is likely to lead to selection of appropriate materiality levels by both actuary and auditor. If such materiality levels are not the same, good communication would facilitate the discussion of any differences with the intended audience.

An important part of knowing the user in communications between the actuary and the auditor may also be to understand what constitutes a material subsequent event to the accountant user who is also the preparer of general purpose public financial statements.

## 8. COMMUNICATION AND DISCLOSURE

Throughout this document, the main factor underlying the selection of a materiality level has been the impact on the user. It would normally be in the user's interest to be aware of the materiality level selected and used by the actuary. Accordingly, it seems reasonable that the actuary would usually at least consider some disclosure regarding the materiality level within the actuarial work product.

However, this consideration must also take into account the complexity of the concept of materiality, the potential importance of the concept to the user, as well as the sophistication of the user who will be receiving the work product. In some cases, it may be apparent that any discussion of the materiality level is likely to give rise to misunderstanding and confusion. In other cases, full disclosure of the materiality level selected, as well as the rationale behind the selection, may be appropriate.

According to paragraphs 1820.07 and 1820.08 of the SOP:

> Appropriate description and disclosure in a report strike a balance between too little and too much. Too little deprives the user of needed information. Too much may exaggerate the importance of minor matters, imply a diminution of the actuary's responsibility for the work, or make the report hard to read.

> The appropriate criterion for description and disclosure is the question: what qualitative and quantitative information best serves the user's understanding and decision-making?

While subsection 1630 of the SOP, CIA/CICA Joint Policy Statement, requires communication regarding materiality between the actuary and the auditor, subsection 1340, Materiality, does not currently require disclosure of the selected materiality level. In actuarial work other than policy liabilities valuations and dynamic capital adequacy testing, it is currently left to the actuary's professional judgment as to whether disclosure of the materiality level is appropriate for the user's understanding of the actuarial work product, and to determine the nature and scope of appropriate disclosure under the circumstances.

According to paragraph 1340.03, "If practical, the actuary would discuss the standard of materiality with the user. Alternatively, the actuary would report the purpose of the work as precisely as possible, so that the user is warned of the risk of using the work for a different purpose with a more rigorous standard of materiality." This approach will mitigate some of the actuary's concerns towards unintended users who would use different materiality levels for their respective purposes. Observance of Section 1340 is made more likely if the intended users of the work product and uses of the work product are enumerated in the actuarial work product.

## 9. AREAS FOR FURTHER RESEARCH AND DISCUSSION

This document is intended to be a first step in an ongoing process of research and discussion on the topic of materiality. In preparing this introductory document, particular attention was paid to features of the Rules, Standards, and Statements applicable to members of the CIA. The task force has identified the following issues for further investigation and discussion:

- How does materiality relate to the range of reasonable results in an actuarial estimate?
- How does materiality relate to the inherent uncertainty associated with an actuarial estimate?
- Whether examples of the application of materiality in a variety of situations should be provided?
- Is there an impact on materiality if each and every assumption must stand on its own?
- Should the actuary treat materiality differently in an internal user report?
- Should the discussion on actuaries and auditors be expanded upon?

- With respect to communication:
  - Should the actuary consider not only disclosure about materiality but also the application of materiality?
  - What communication is required if there is no written report?

The task force presents the above list of items to be considered for example purpose only and not to limit future efforts.

## APPENDIX A

## HELPFUL REFERENCES REGARDING MATERIALITY

**Peter D. Arthur, CA, CIA Open Forum #21: Unresolved Issues in Standards of Practice**

> A misstatement or the aggregate of all misstatements in financial statements is considered to be material if, in the light of surrounding circumstances, it is probable that the decision of a person who is relying on the financial statements and who has a reasonable knowledge of the business and economic activities would be changed or influenced by the misstatement or the aggregate of all misstatements.

**ASOP No. 5, Incurred Health and Disability Claims**

2.8 Material – Resulting in an impact, significant to the interested parties, on the affected actuarial incurred claim estimate."

**ASOP No. 17, Expert Testimony by Actuaries**

2.7 Material – An item is material if it has an impact on the affected actuarial opinion, which is significant to the interested parties."

**ASOP No. 36, Statements of Actuarial Opinion regarding Property/Casualty Loss and Loss Adjustment Expense Reserves**

Although the ASOP itself applies only to property/casualty work of a particular kind, Section 3.4 of the ASOP contains some useful ideas for action in all practice areas that actuaries may wish to consider when selecting standards of materiality. The section is reproduced here in full.

3.4 Materiality – In evaluating materiality within the context of a reserve opinion, the actuary should consider the purposes and intended uses for which the actuary prepared the statement of actuarial opinion. The actuary should evaluate materiality based on professional judgment, materiality guidelines or standards applicable to the statement of actuarial opinion and the actuary's intended purpose for the statement of actuarial opinion. The actuary should understand which financial values are usually important to the intended uses of the statement of actuarial opinion and how those financial values are likely to be affected by changes in the reserves and future payments for losses and loss adjustment expenses. For example, materiality might be evaluated in terms of the specified reserve amount for which an opinion is being given. For a statement of actuarial opinion for an insurance company to be used for financial reporting to insurance regulators, materiality might be evaluated in terms of the company's reported statutory surplus. As another example, for a statement of actuarial opinion to be used for an actuarial appraisal of an insurance company, it might be appropriate to evaluate materiality in terms of both the company's net worth and annual net income, since both values are usually important factors in assessing the value of the company.

**ASOP No. 41, Actuarial Communications**

2.5 Intended Audience—The persons to whom the actuarial communication is directed and with whom the actuary, after discussion with the principal, intends to communicate. Unless otherwise specifically agreed, the principal is always a member of the intended audience. In addition, other persons or organizations, such as regulators, policyholders, plan participants, investors, or others, may be designated by the principal, with consent of the actuary, as members of the intended audience.

2.6 Other User—Any user of an actuarial communication who is not a principal or member of the intended audience.

3.1.2 Form and Content—The actuary should take appropriate steps to ensure that the form and content of the actuarial communication are clear and appropriate to the particular circumstances, taking into account the intended audience. To accomplish these actuarial communication objectives, the actuary should consider whether such actuarial communication should be made in an actuarial report. Factors to consider in making such a determination include the complexity of the actuarial engagement or assignment; the actuary's perception of the significance of the actuarial findings; and relevant communication guidance in other ASOPs. Information included in previous actuarial communications that are available to the intended audience may be incorporated by reference, by the actuary, into an actuarial communication issued under this standard.

3.5.2 No Obligation to Communicate with Other Users—Nothing in this standard creates an obligation for the actuary to communicate with any person other than the intended audience.

**Paragraph 1340.02 through to 1340.06 of the SOP**

1340.02 Judgment about materiality pervades virtually all work and affects the application of nearly all standards. The words "materiality" and "material" seldom appear in the standards, but are understood throughout them. For example, the recommendation that approximation is appropriate if it does not affect the result means that it does not **materially** affect the result.

1340.03 Material" has its ordinary meaning, but judged from the point of view of a user, having regard for the purpose of the work. Thus, an omission, understatement, or overstatement is material if the actuary expects it materially to affect either the user's decision making or the user's reasonable expectations. Usually, however, the user does not specify a standard of materiality, so the judgment falls to the actuary. That judgment may be difficult for one or more of these reasons:

> The standard of materiality depends on how the user uses the actuary's work, which the actuary may be unable to foresee. If practical, the actuary would discuss the standard of materiality with the user. Alternatively, the actuary would report the purpose of the work as precisely as possible, so that the user is warned of

the risk of using the work for a different purpose with a more rigorous standard of materiality.

The standard of materiality may vary among users. The actuary would choose the most rigorous standard of materiality among the users.

The standard of materiality may vary among uses. For example, the same accounting calculations may be used for a pension plan's financial statements and the financial statements of its participating employer. The actuary would choose the more rigorous standard of materiality between those two uses.

The standard of materiality depends on the user's reasonable expectations, consistent with the purpose of the work. For example, advice on winding-up a pension plan may affect each participant's share of its assets, so there is a conflict between equity and practicality. Similarly for advice on a policyholder dividend scale.

1340.04 The standard of materiality also depends on the work and the entity which is the subject of that work. For example:

A given dollar standard of materiality is more rigorous for a large than for a small entity.

The standard of materiality for valuation of an insurer's policy liabilities is usually more rigorous for those in its financial statements than for those in a forecast in dynamic capital adequacy testing.

The standard of materiality for data is more rigorous for determining an individual benefit (such as in a pension plan wind-up) than for a valuation of a group benefits plan (such as a going-concern valuation of a pension plan's liabilities).

The standard of materiality for work involving a threshold, such as a regulatory capital adequacy requirement calculation of an insurer or a statutory minimum or maximum funding level for a pension plan would become more rigorous as the entity approaches that threshold.

1340.05 The actuary would not report an immaterial deviation from a particular recommendation or other guidance in the standards except if doing so assists a user to decide if the standard of materiality is appropriate for that user.

1340.06 The recommendation applies to both calculation and reporting standards.

**Judicial Application of Materiality Levels**

The following excerpts have been selected from a sampling of cases in which the courts have defined materiality in the context of financial statements.

SEC v. Price Waterhouse, 797 F.Supp. 1217, 1237 (S.D.N.Y., 1992).

"Materiality is defined in the accounting literature as '[t]he magnitude of an omission or misstatement of accounting information that, in light of surrounding circumstances, makes it probable that the judgment of a reasonable person would have been changed or influenced by the omission or misstatement.' (citation omitted) While the literature reflects that the 5 to 10 percent range relied on by the Commission is 'useful' (citation omitted), that literature also makes clear that there are no generalized standards for determining the materiality of a particular 'judgment item' (citation omitted), because a materiality decision is a qualitative one requiring consideration by an accountant of a wide range of information factors including, *inter alia*, the nature of the item under consideration; whether it arises from a routine or abnormal transaction; the size of the enterprise; and the company's financial condition and trends in profitability. (citation omitted) Moreover, FAS Con 2 explicitly states that '[m]agnitude by itself, without regard to the nature of the item and the circumstances in which the judgment has to be made, will not generally be a sufficient basis for a materiality judgment.'" (citation omitted)

Delta Holdings, Inc. v. National Distillers and Chemical Corp., 945 F.2d 1226, 1242 (C.A.2 (N.Y.), 1991).

"The applicable legal standard regarding the materiality of omitted information is whether 'there is a substantial likelihood that a reasonable shareholder would consider it important' or 'a substantial likelihood that the disclosure…would have been viewed by the reasonable investor as having significantly altered the total mix of information made available.'" (citation omitted)

Hudson v. General Dynamics Corp., 118 F.Supp.2d 226, 249 (Conn., 2000).

"This determination [of materiality] is . . . based on whether there is a substantial likelihood that the misrepresentation would mislead a reasonable employee in making an adequately informed decision about if and when to retire. (citation omitted) [There are] a number of factors to consider when determining materiality, including 'how significantly the statement misrepresents the present status of internal deliberations regarding future plan changes; the special relationship of trust and confidence between the plan fiduciary and beneficiary; whether the employee was aware of other information or statements from the company tending to minimize the importance of the misrepresentation or should have been so aware, taking into consideration the broad trust responsibilities owed by the plan administrator to the employee and the employee's reliance on the plan administrator for truthful information.'" (citation omitted)

**FASB Statement of Financial Accounting Concepts No. 2, "Qualitative Characteristics of Accounting Information"**

FASB Statement No. 2 generally provides that quantitative and qualitative factors should both be considered when determining materiality. It further states that FASB has long emphasized that materiality cannot be reduced to a numeric formula. "The predominant

view is that materiality judgments can properly be made only by those who have all the facts. The Board's present position is that no general standards of materiality could be formulated to take into account all the considerations that enter into an experienced human judgment." Additionally, FASB Statement No. 2 provides that "Magnitude by itself, without regard to the nature of the item and the circumstances in which the judgment has to be made, will not generally be a sufficient basis for a materiality judgment."

The omission or misstatement of an item in a financial report is material if, in the light of surrounding circumstances, the magnitude of the item is such that it is probable that the judgment of a reasonable person relying upon the report would have been changed or influenced by the inclusion or correction of the item.

**International Accounting Standard 1, "Presentation of Financial Statements"**

"Omissions or misstatements of items are material if they could, individually or collectively, influence the economic decisions of users taken on the basis of the financial statements. Materiality depends on the size and nature of the omission or misstatement judged in the surrounding circumstances. The size or nature of the item, or a combination of both, could be the determining factor."

**International Accounting Standards**

"Users are assumed to:

- Have a reasonable knowledge of business and economic activities and accounting and a willingness to study the information in the financial statements with reasonable diligence;
- Understand that financial statements are prepared and audited to levels of materiality and that there is a relationship between the level of materiality used and the cost and timing of the audit;
- Recognize the uncertainties in the measurement of amounts based on the use of estimates, judgment and the consideration of future events;
- Make reasonable economic decisions on the basis of the information in the financial statements.

The determination of materiality, therefore, takes into account how users with such characteristics could reasonably be expected to be influenced in making economic decisions.

- When determining materiality in audits of financial statements or other historical financial information, prepared for a special purpose, the auditor considers the needs of specific users in the context of the objective of the engagement.
- Materiality is determined without regard to the degree of inherent uncertainty associated with the measurement of particular items. For example, the fact that the financial statements include very large provisions with a high degree of estimation uncertainty (e.g., provisions for insurance claims in the case of an insurance company, oil rig

decommissioning costs in the case of an oil company, or more generally, legal claims against an entity) does not cause the auditor to determine the materiality level for the financial statements to be higher than for financial statements that do not include such inherent estimation uncertainties."

**Proposed International Standard on Auditing 320 (Revised)**

**Materiality in Planning and Performing an Audit**

*Materiality in the Context of an Audit*

5. The auditor's consideration of materiality is a matter of professional judgment, and is affected by the auditor's perception of the financial information needs of users of the financial statements. For the purposes of the audit, the auditor is concerned with misstatements, including omissions, which could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements. In this context, it is reasonable for the auditor to assume that users:

   (a) Have a reasonable knowledge of business and economic activities and accounting and a willingness to study the information in the financial statements with reasonable diligence;

   (b) Understand that financial statements are prepared and audited to levels of materiality;

   (c) Recognize the uncertainties inherent in the measurement of amounts based on the use of estimates, judgment and the consideration of future events; and

   (d) Make reasonable economic decisions on the basis of the information in the financial statements.

6. Furthermore, the auditor's consideration of materiality is based on the common financial information needs of users as a group; the auditor does not consider the possible effect of misstatements on specific individual users, whose needs may vary widely.

7. Materiality depends on the size and nature of the misstatement judged in the surrounding circumstances. The size or nature of the item, or a combination of both, could be the determining factor.

*Use of Benchmarks in Determining Materiality*

11. Determining what is material to users of the financial statements requires the exercise of professional judgment. The auditor often applies a percentage to a chosen benchmark as a starting point in determining a materiality level for the financial statements as a whole.

12. When identifying an appropriate benchmark, the auditor has regard to factors such as:

    - The elements of the financial statements (e.g., assets, liabilities, equity, income, expenses);
    - Whether there are items on which the attention of the users of the particular entity's financial statements tends to be focused (e.g., for the

purpose of evaluating financial performance users may tend to focus on profit, revenue or net assets);

- The nature of the entity, where the entity is at in its life cycle, and the industry and economic environment in which the entity operates;
- The size of the entity, nature of its ownership and the way it is financed (e.g., if an entity is financed solely by debt rather than equity, users may put more emphasis on assets, and claims on them, than on the entity's earnings); and
- The relative volatility of the benchmark.

14. Having identified an appropriate benchmark, the auditor identifies relevant financial data to be used in determining materiality. The auditor ordinarily considers prior periods' financial results and financial positions, the period-to-date financial results and financial position, and budgets or forecasts for the current period, taking account of significant changes in the circumstances of the entity (e.g., a significant business acquisition) and relevant changes of conditions in the industry or economic environment in which the entity operates. For example, when the auditor, as a starting point, determines materiality for a particular entity based on a percentage of profit before tax from continuing operations, circumstances that give rise to an exceptional decrease or increase in such profit may lead the auditor to conclude that materiality is more appropriately determined using a normalized profit before tax from continuing operations figure based on past results.

*Documentation*

26. The auditor should document:

(a) The materiality level for the financial statements as a whole;

(b) The materiality level for a particular class of transactions, account balance or disclosure, if applicable;

(c) The amount (or amounts) determined for purposes of assessing risks of material misstatement and designing further audit procedures;

(d) Any changes made to (a) – (c) as the audit progressed; and

(e) How the amounts in (a) – (d) were determined.

**Mary D. Miller, FCAS, MAAA, Actuary Ohio Department of Insurance**

**"Materiality and the Actuary", Casualty Loss Reserve Seminar, September 2005**

Materiality reviewed in relationship to financial values that are important to the intended audience, for example:

- Regulator: statutory surplus; risk based capital; loss, LAE and unearned premium reserves; IRIS tests
- Appraisal: net worth (GAAP); net income; earnings per share

Materiality considerations:

- Single vs. multi-line company
- Net retention
- Single company vs. member of a group
- Access to capital
- Management
- Prior loss reserve runoff
- Financial strength

**"Materiality and ASOP No. 36: Considerations for the Practicing Actuary", CAS Committee on Valuation, Finance, and Investments**

"No formula can be developed that will substitute for professional judgment by providing a materiality level for each situation."

Possible quantitative matters that the actuary could consider in the initial phase of determining whether a particular item is material:

- Absolute magnitude of item that represents a correction or a differing result if reviewing the work of others
- Absolute magnitude of item for which data are not available or are incomplete
- Ratio of item to reserves or statutory surplus
- Impact of item on IRIS ratios
- Impact of item on risk-based capital results
- Likelihood or size of potential variation of ultimate actual results from current expectations
- Ratio of item to net income or net worth
- Impact of item on earnings per share

**NAIC Financial Examiners Handbook**

Planning materiality: starting point is 1% to 5% of surplus.

**NAIC Accounting Practices and Procedures Manual**

The Codification defines a material omission or misstatement of an item in a statutory financial statement as having a magnitude such that it is probable that the judgment of a reasonable person relying upon the statutory financial statement would be changed or influenced by the inclusion or correction of the item.

- Some items are more important than others and require closer scrutiny. These include items which may put the insurer in danger of breach of covenant or regulatory requirement (such as an RBC trigger), turn a loss into a profit, reverse a downward earning trend, or represent an unusual event.
- The relative size of the judgment item is usually more important than the absolute size. An example for this is a reserve amount that would

significantly impact the earnings of a small company but barely impact the earnings of a large company.

- The amount of the deviation of an item that is considered immaterial may increase if the attainable degree of precision decreases.

**SEC Staff Accounting Bulletin: No. 99 – Materiality**

The relevant portions of this SEC bulletin may be summarized as follows:

- The common practice of using quantitative thresholds as rules of thumb for materiality has no basis in law or accounting literature. Exclusive reliance on certain quantitative benchmarks to assess materiality in preparing financial statements … is inappropriate; misstatements are not immaterial simply because they fall beneath a numerical threshold.
- The use of a percentage as a numerical threshold, such as 5%, may provide the basis for a preliminary assumption regarding materiality. There is no objection to a "rule of thumb" as an initial step in assessing materiality.
- Both quantitative and qualitative factors should be considered.
- Experienced human judgment is necessary and appropriate.
- An item that is small in absolute magnitude may be important if its inclusion or modification would change someone's conclusion about the basic financial condition of the company.
- Materiality should be considered both separately and in total. An example given considers materiality issues affecting revenues and expenses even though the difference in net income may net out to be small.

A matter is material if there is a substantial likelihood that a reasonable person would consider it important.

Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

***Report***

# Report of the CIA Task Force on the Appropriate Treatment of Reinsurance

## Task Force on the Appropriate Treatment of Reinsurance

**October 2007**

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Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

# Memorandum

**To:** All Life and Property and Casualty Practitioners

**From:** Doug Tozer, Chairperson
Task Force on the Appropriate Treatment of Reinsurance

Jacques Tremblay, Chairperson
Practice Council

**Date:** October 3, 2007

**Subject:** **Report of the CIA Task Force on the Appropriate Treatment of Reinsurance**

**Deadline for Comments: December 3, 2007**

Over the last few years, securities and insurance regulators, rating agencies and media from around the world have been paying closer attention to reinsurance transactions. In particular, reinsurance transactions which tend to result in a reduced degree of risk transferred, sometimes referred to as Finite Reinsurance, have been under heavy scrutiny. In Canada, the Office of the Superintendent of Financial Institutions (OSFI) has become interested in the treatment of reinsurance, and has asked the Canadian Institute of Actuaries to look into this matter further.

The report that follows was prepared by the Task Force to provide guidance on reinsurance to the actuarial and insurance community in Canada. It provides a brief overview of reinsurance and risk transfer principles, paying attention to the emerging international consensus. It provides guidance on assessing risk transfer in a reinsurance contract for accounting and valuation purposes, and examines other related topics such as finite and financial reinsurance, side agreements, mirroring, bifurcation and reinsurance counterparty risk.

In accordance with the Institute's Policy on Due Process for Approval of Practice-Related Material other than Standards of Practice, this research paper has been unanimously approved by the Task Force on the Appropriate Treatment of Reinsurance and has received final approval for distribution by the Practice Council on May 16, 2007.

This report, including recommendations and opinions paper, is being circulated for comments. After the comment period, it will be issued as an educational note. Please contact Doug Tozer at DTozer@munichre.ca if you have any comments or questions.

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## INTRODUCTION

The Practice Council (PC), the Committee on Life Insurance Financial Reporting (CLIFR) and the Committee on Property and Casualty Insurance Financial Reporting (PCFRC) have reviewed the CIA Standards of Practice (SOP) addressing the topic of reinsurance. The focus of the review was on the adequacy of the SOP and the potential need for modifications, improvements or additional guidance. The PC, CLIFR and the PCFRC each concluded that the current SOP are adequate with respect to the treatment of reinsurance and that no immediate changes are necessary.

However, the PC, CLIFR and the PCFRC believe that more clarity and direction would be appropriate with respect to the definition of reinsurance and its eventual financial and capital treatment for an insurance entity. In this regard, in June of 2005, the PC issued a memorandum of guidance on the "Appropriate Treatment of Reinsurance". That memorandum summarized key principles and SOP pertaining to the appropriate treatment of reinsurance in actuarial work. It also announced the PC's intention to form a task force, including external stakeholders, to examine reinsurance-related topics in greater depth. The task force was mandated to develop additional recommended guidance and to consider the need for potential modifications to SOP.

Specifically, the task force's mandate is as follows:

> *The focus of the task force will be on finite reinsurance, the degree of risk transfer in reinsurance transactions, side agreements, stop loss arrangements and reinsurance counterparty risk. The task force will consist of Life and P&C actuaries from the Committee on Life Insurance Financial Reporting (CLIFR) and the Property and Casualty Insurance Financial Reporting Committee (PCFRC) and will invite participation from reinsurance practitioners, federal and provincial regulators, the Insurance Bureau of Canada (IBC), the Canadian Life and Health Insurance Association (CLHIA) and the Canadian Institute of Chartered Accountants (CICA). The task force will develop a research paper or an educational note on these matters. The task force will consider and suggest, if deemed necessary, potential modifications to the SOP.*

The report is intended to supplement the CIA SOP in an effort to achieve some consistency in how actuaries deal with reinsurance. Probably the most important area of supplement is in the concept of risk transfer as the CIA SOP are silent in this area.

## DEFINITIONS

The task force has concluded that International Financial Reporting Standard 4 (IFRS 4) contains the most comprehensive definitions relating to insurance and reinsurance and the ones that are most consistent with current Canadian Generally Accepted Accounting Principles (GAAP). Therefore, in this report the following definitions, which are based on the IFRS 4 definitions, are applicable:

Insurance contract: A contract under which one party (the ***insurer***) accepts significant ***insurance risk*** from another party (the ***policyholder***) by agreeing to compensate the ***policyholder*** if a specified uncertain future event (the ***insured event***) adversely affects the ***policyholder***. Compensation is defined by the ***insurance contract*** terms.

Insurer: The party that has an obligation under an ***insurance contract*** to compensate a ***policyholder*** if an ***insured event*** occurs.

| | |
|---|---|
| Policyholder: | A party that has a right to compensation under an ***insurance contract*** if an ***insured event*** occurs. |
| Insured event: | An uncertain future event that is covered by an ***insurance contract*** and creates ***insurance risk***. |
| Insurance risk: | Risk, other than ***financial risk***, transferred from a ***policyholder*** to an ***insurer***. A new risk created by an ***insurance contract*** is not an ***insurance risk***. In particular, lapse or persistency risk (i.e., the risk that the ***policyholder*** will cancel the contract earlier or later than the ***insurer*** had expected) is not an ***insurance risk*** because the payment to the ***policyholder*** is not contingent on an uncertain future event that adversely affects the ***policyholder***. |
| Financial risk: | The risk of a possible future change in one or more of a specified interest rate, financial instrument price, commodity price, foreign exchange rate, index of prices or rates, credit rating or credit index or other variable, provided in the case of a non-financial variable that the variable is not specific to a party to the contract. |
| Reinsurance contract: | A contract under which one party (the ***reinsurer***) accepts significant ***reinsurance risk*** from another party (the ***cedant***) by agreeing to compensate the **cedant** if specified uncertain future event(s) (the ***reinsured events***) adversely affect the **cedant**. Compensation is defined by the **reinsurance contract** terms. |
| Reinsurer: | The party that has an obligation under a ***reinsurance contract*** to compensate a ***cedant*** if a ***reinsured event*** occurs. |
| Cedant: | A party that has a right to compensation under ***reinsurance contract*** if a ***reinsured event*** occurs. |
| Reinsured events: | Uncertain future events that are covered by a ***reinsurance contract*** and create ***reinsurance risk***. |
| Reinsurance risk: | Risk, other than ***financial risk***, transferred from a ***cedant*** to a ***reinsurer***. A new risk created by a ***reinsurance contract*** is not a ***reinsurance risk***. For Life Business, ***policyholder*** lapse or persistency risk (i.e., the risk that a ***policyholder*** will cancel the contract earlier or later than the ***insurer*** had expected) is a ***reinsurance risk*** because the payment to the ***cedant*** is contingent on uncertain future event(s) that adversely affect the ***cedant***. |

## BACKGROUND

### Overview of Reinsurance Concepts and Terminology

In order for this report to focus on the key issues it has been written assuming that the reader has a basic understanding of reinsurance concepts and terminology. Readers who wish to enhance their basic reinsurance knowledge are encouraged to refer to other sources. Two good sources are; Life, Health & Annuity Reinsurance (2005) by John E. Tiller, FSA, Denise Fagerberg Tiller, FSA, MAAA and Reinsurance (1997) by Strain Publishing.

**Finite Reinsurance**

The terms "finite reinsurance" and "financial reinsurance" are widely used but are difficult to define precisely. Generally speaking, "finite reinsurance" contracts are associated with the P&C reinsurance industry and have the effect of limiting the reinsurer's downside loss, whereas "financial reinsurance" contracts are more common in the life reinsurance industry and they tend to be associated with signifying the motivational intention of the parties rather than limiting the reinsurer's downside loss.

In the International Association of Insurance Supervisors' (IAIS) Guidance Paper on Risk Transfer, Disclosure and Analysis of Finite Reinsurance, "finite reinsurance" is stated to be "*a generic term used to describe an entire spectrum of reinsurance arrangements that transfer limited risk relative to aggregate premiums that could be charged under the contract.*" The guidance paper goes on further to say that "*…there is no accepted global definition of finite reinsurance…*" The American Academy of Actuaries Risk Transfer Practice Note contains a similar assessment of "finite reinsurance" as it says "*...there is no universally accepted definition of the term finite…*" In general, "finite reinsurance" is used to denote reinsurance where risk transfer is, in some way, limited. The IAIS Guidance Paper on Risk Transfer, Disclosure and Analysis of Finite Reinsurance also contains additional definitions of "financial reinsurance" which indicate that this categorization of reinsurance contracts has financial and strategic motivations taking precedence over the insurance risk transfer motivation.

The task force concurs that the terms "finite reinsurance" and "financial reinsurance" are ambiguous terms and for that reason believes that classifying reinsurance contracts into "finite/financial" and "non-finite/traditional" is not useful and could possibly be misleading. Therefore, this report will not try to define "finite reinsurance" and "financial reinsurance" but rather it presents the various types of limitations that can exist in reinsurance contracts. Consequently, the remainder of this report does not use the terms "finite reinsurance" and "financial reinsurance." The task force believes, however, that this report provides guidance on all reinsurance contracts including those contracts that can be described as "finite/financial."

**Reinsurance and the Actuary**

**CGAAP Valuation of Policy Liabilities**

For both Life and P&C insurers, the valuation of policy liabilities is governed by the General SOP. Further guidance is provided in the practice-specific SOP including educational notes and other guidance.

Subsection 2130 of the SOP directs the actuary to establish liabilities that are consistent with the insurers accounting policy, and that consider the future net cash flow arising from in force policies at the balance sheet date. Paragraph 2130.05 specifies that the cash flows are net of reinsurance.

Consistency in the context of reinsurance treatment means that the actuary would ensure that the liabilities provide consistently for cash flows gross of reinsurance, and reinsurance cash flow. In valuing the features of a reinsurance contract, the assumptions used have to be consistent with the gross cash flows. For example, if the reinsurance contract specifies that a particular feature becomes triggered under a certain assumption, the actuary would reflect that feature consistent with the assumption made for the gross cash flow.

The actuary of the ceding company needs to consider the possibility that the reinsurer will exercise its options to its advantage (i.e., anti-select against the insurer), and vice-versa. This requires the actuary to test the various features of the reinsurance contract, assuming that each party exercises the option to their advantage. The final policy liability is generally the largest resulting liability. Although it is not directly stated, it is implied that in conducting these tests, the actuary would consider all cash flows arising from the reinsurance treaty.

Although not directly stated in the CIA SOP, the task force believes that it is strongly implied that:

a) the valuation considers all cash flows arising from the reinsurance contract;

b) all modifications and side agreements to the reinsurance contract are required to be considered; and

c) the credit rating of the reinsurer is to be taken into account.

### Regulatory Capital Treatment of Reinsurance

Federally or provincially regulated Life and P&C insurers and reinsurers in Canada are required to determine their capital adequacy according to regulatory guidelines or regulations. The capital requirements are generally calculated using a factor-based approach, and as such, are not always well suited to recognizing the effects of reinsurance on the risk profile of the insurer. The factors are applied to exposure bases which are generally net of reinsurance but the treatment of reinsurance is a “black or white” decision (i.e., if a reinsurance contract is in place the ceding company receives 100% reinsurance credit).

## CURRENT REINSURANCE ACCOUNTING PRACTICE

### Reinsurance Accounting and Deposit Accounting

When a contract is accounted for as reinsurance, all premiums, allowances and expenses under the contract are included in revenues and expenses, and claims recoveries under the contract are estimated in the valuation of insurance policy liabilities and are also included in revenues and expenses. This is referred to as “reinsurance accounting”, and when this is not appropriate under generally accepted accounting principles, “deposit accounting” must be applied to the contract instead.

Under “deposit accounting”, the premium paid or received is initially recorded as an asset or liability (the “deposit”). For contracts that do not transfer significant underwriting risk, the present value of expected recoveries is also reflected in the carrying value of the deposit, and changes in estimates of the deposit are included in interest income or expense. For contracts that transfer underwriting risk but no significant timing risk, the deposit changes to reflect the unexpired portion of coverage inherent in the premiums, which is reflected in expense, and also to reflect the present value of cash flows from future loss recoveries, which is included in losses for the period. The primary reference for deposit accounting is American Institute of Certified Public Accountants Statement of position 98-7, “Deposit Accounting: Accounting for Insurance and Reinsurance Contracts that Do Not Transfer Insurance Risk.”

**Relevant Accounting Standards**

In considering whether risk has been transferred under a reinsurance agreement, the actuary must be aware of the applicable accounting standards and related regulatory requirements that are applicable to the valuation of insurance policy liabilities.

There are currently three principal different sets of GAAP that may be relevant; Canadian GAAP, United States GAAP (US GAAP), and IFRS. In addition, Canadian regulatory requirements narrow the range of choices available within GAAP for P&C insurers. The rules applicable to reinsurance are summarized below.

**Canadian GAAP**

For P&C insurers, Accounting Guideline AcG-3 provides minimal guidance on reinsurance risk transfer, while for life insurers, CICA 4211 effectively embeds CIA standards and the Canadian Asset Liability Method (CALM) in Canadian GAAP. However, with the recent implementation of the Financial Instruments accounting rules of CICA 3855, a reinsurance contract that principally involves the transfer of financial risks is no longer exempt from the general accounting rules of CICA 4211 and CALM, and is required to be classified as a financial instrument. This will require life insurers to consider the classification of reinsurance arrangements that may transfer significant financial risks as well as insurance risks.

Both the non-life and life Canadian GAAP pronouncements make general statements that in order to account for a contract as reinsurance, the contract should transfer risk, and AcG-3 further states that the risk transferred should be insurance risk. Contracts that do not transfer insurance risk should follow deposit accounting. No quantitative tests or other detailed guidance are provided in authoritative Canadian GAAP literature.

As a result, life insurers have typically not applied any quantitative testing of risk transfer for reinsurance, and in the past, the commonly expressed view has been that this is not necessary since the classification of reinsurance does not affect the cash flows from reinsurance contracts one way or the other, when completing a CALM valuation.

In contrast, P&C insurers have been significantly affected by Canadian regulatory requirements, as described in the following section.

**Canadian Regulatory Requirements**

Canadian GAAP is required for financial reporting to Canadian regulators. However, regulators have the statutory right to specify the use of accounting rules that may not be in accordance with GAAP. To date, regulators have only acted to narrow the range of alternatives available under GAAP.

For P&C insurers, OSFI Guideline D-7 effectively imports US GAAP for assessing reinsurance risk transfer. This guideline incorporates language drawn from Statement of Financial Accounting Standards 113 (FAS 113), which is described in more detail below.

It should be noted that there is no OSFI requirement for life insurers similar to Guideline D-7, and so regulatory requirements for life insurers have not forced the use of US GAAP rules for reinsurance for life insurers.

**United States GAAP**

US GAAP pronouncements for reinsurance risk transfer are relatively complex and only a general conceptual summary is provided here. The principal source is FAS 113.

- FAS 113 makes a distinction between short-duration and long-duration insurance contracts, as follows.
- For ***short-duration insurance contracts***, two tests must be passed to determine that risk has been transferred:

  a) *"The reinsurer assumes significant insurance risk under the reinsured portions of the underlying contracts.*

  b) *It is reasonably possible that the reinsurer may realize a significant loss from the transaction.*

  *A reinsurer shall not be considered to have assumed significant insurance risk under the reinsured contracts if the probability of a significant variation in either the amount or the timing of the payments by the reinsurer is remote."*

  FAS 113 also provides that <u>both</u> the amount and timing of the reinsurer's payments should depend on and directly vary with the amount and timing of claims settled under the reinsured contracts. Contract provisions that would delay timely reimbursement of claims could also rule out the use of reinsurance accounting, as can other risk-limiting contract features that limit the amount of loss to the reinsurer.

- For ***long-duration insurance contracts*** (typically life and health contracts), as for short-duration contracts, there must be a reasonable possibility that the reinsurer may realize a significant loss from assuming insurance risk, and that risk must come from the mortality risk and/or morbidity risk in the underlying insurance contracts.
- "Significant loss" is considered to mean a net overall loss on the reinsurance contract (measured based on the present value of cash flows), not just a significant claim under the contract. It can be difficult to meet this test in reinsuring inherently profitable blocks of business, even if there are no "finite/financial reinsurance" aspects to the agreement. As a result, it is possible that a contract that transfers insurance risk could nevertheless not qualify for reinsurance accounting under US GAAP.
- "Paragraph 11" exemption – FAS113.11 provides that if the amount of risk transfer is judged to be insufficient, reinsurance accounting can still be applied if the reinsurer has "stepped into the shoes" of the ceding insurer, so that the reinsurer has taken on "substantially all" of the insurance risk that is present. However, "substantially all" is strictly interpreted to mean effectively 100%, so that it cannot be used if there has been any modification of the risk, retention or participation features by the ceding company. This provision is effectively the only basis under which US GAAP would allow reinsurance accounting for the reinsurance of inherently profitable insurance contracts.
- Quantitative testing – There is an expectation that quantitative testing of cash flows would be used to demonstrate that sufficient risk has been transferred. While not part of any authoritative guidance, "at least a 10% chance of at least a 10% loss" is a commonly expressed rule-of-thumb. It is also accepted that in some instances, such as earthquake catastrophe coverage, a lower percent chance of a relatively larger loss would be acceptable.

**International Financial Reporting Standards**

International Financial Reporting Standards (IFRS) have been adopted as GAAP in most of Europe and in many other jurisdictions outside of the United States. The Canadian Accounting Standards Board has announced that it is intended that Canadian GAAP will converge with IFRS over time.

To date, IFRS does not provide complete guidance on the accounting measurements for insurance contracts, but further standards are under development in this area. However, current IFRS standards do include robust definitions of insurance contracts and other provisions relevant to reinsurance.

IFRS Standard 4 *Insurance Contracts* ("IFRS 4") applies to all insurance contracts, including reinsurance contracts, and defines an insurance contract as:

> "A contract under which one party (the insurer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder." *(IFRS 4 Appendix A)*

and further defines insurance risk as:

> "Risk, other than financial risk, transferred from the holder of the contract to the issuer." *(IFRS 4 Appendix A)*

Also, IFRS 4 B23 states that:

> "Insurance risk is significant if, and only if, an insured event could cause an insurer to pay significant benefits in any scenario, excluding scenarios that lack commercial substance (i.e., have no discernible effect on the economics of the transaction). If significant additional benefits would be payable in scenarios that have commercial substance, the condition in the previous sentence may be met even if the insured event is extremely unlikely or even if the expected (i.e., probability-weighted) present value of contingent cash flows is a small proportion of the expected present value of all the remaining contractual cash flows."

Also, IFRS 4 B19 (b) gives examples of items that are not insurance contracts:

> "Contracts that have the legal form of insurance but pass all significant insurance risk back to the policyholder through non-cancellable and enforceable mechanisms that adjust future payments by the policyholder as a direct result of insured losses, for example, some financial reinsurance contracts or some group contracts."

IFRS 4 does not provide quantitative guidance in assessing significance, and it requires that "an insured event could cause an insurer to pay significant benefits in any scenario," rather than requiring that an overall loss on the reinsurance contract could plausibly arise as is the case under US Statement of Financial Accounting Standards 113. As a result, IFRS 4 appears to allow a wider range of reinsurance contracts to be given reinsurance accounting than would be the case under US GAAP. For example, it is clearer under IFRS 4 that catastrophe covers are expected to receive reinsurance accounting.

Normally, insurance and reinsurance contracts measured in accordance with Canadian actuarial practices will reflect all contractual rights or obligations, so that unbundling would be permitted but not required under IFRS. IFRS 4 provides that "unbundling" or "bifurcation" of a contract between insurance and deposit components is ***required*** if some contractual rights or obligations would not otherwise be recognized and measured in the balance sheet of the insurer, so long as the deposit component can be reliably measured. Unbundling is ***permitted*** but not required otherwise, and might be done if the preparer believes that this provides better disclosure**.**

## THE CONCEPT OF RISK TRANSFER

### Key Principles of Risk Transfer

Risk transfer can be a complicated subject to define and describe. Most insurance and reinsurance professionals believe they have an intuitive understanding of the concept of risk transfer from a high level but have probably not delved into the specifics. To set the stage for a deeper risk transfer understanding, the task force has identified the following four key principles that provide a framework for risk transfer and risk transfer assessment.

***Risk Transfer Principle #1:*** *There are several approaches that can be used to assess the existence of risk transfer.*

There is no single test or rule that will be applicable in assessing the existence of risk transfer for each and every type of contract. In some contracts, it may be obvious that risk transfer exists even in the absence of any specific test.

Possible approaches to assessing risk transfer are discussed in detail throughout the remainder of this paper.

***Risk Transfer Principle #2:*** *Professional judgment will be required when assessing the existence of risk transfer.*

Professional judgment will be either in the form of selecting appropriate historical data to study or in setting parameters for models that will be used to perform a quantitative test or in documenting qualitative assessments. For both Life and P&C reinsurance, actuaries and other relevant professionals will assess risk transfer.

SOP paragraph 2130.02 requires the actuary to "coordinate the valuation with the insurer's accounting policy…so that the policy liabilities...conform to the presentation of the income statement." This requirement means the Appointed Actuary must assess risk transfer for each reinsurance contract. If the Appointed Actuary does not reach a similar conclusion on risk transfer as is being presented in the financial statements then a qualified opinion must be considered.

***Risk Transfer Principle #3:*** *The entire agreement consisting of the reinsurance contract and all written and verbal agreements and correspondence must be considered in assessing the existence of risk transfer.*

This principle is consistent with the valuation principle in the SOP. Risk transfer must be assessed based on all commitments the parties have made to each other regardless of whether those commitments are included as part of the reinsurance contract document. Reinsurance contracts are typically composed of a written contract and may contain one or more amendments that occur subsequent to the introduction of the reinsurance contract. Each of these needs to be

considered in assessing risk transfer regardless of whether they have been included in the reinsurance contract document or not.

A reinsurance contract could also be modified by verbal agreements or by other written documents that may not be obvious amendments. The actuary must make a reasonable effort to be informed of each and every commitment made by any authorized party. Further discussion on side agreement can be found later in this report.

***Risk Transfer Principle #4:*** *The existence of risk transfer must be assessed at inception of the contract and every time a change to the contract that significantly alters the expected future cash flows of that contract is made.*

Risk transfer does not need to be continually assessed. Events that occur during the normal course of the contract do not trigger a need for a reassessment. An example of such a feature is the build up of a Claims Fluctuation Reserve. Another example is when the reinsurer earns significant profits over time such that if this level of profits had been included in the risk transfer assessment performed at issue then the risk transfer would be negated.

However, risk transfer may need to be reassessed any time a modification to the contract is made. Examples of changes requiring risk transfer reassessment are: a revision to the reinsurance premium rates, a revision to the coverage levels other than a linear increase or decrease in the quota share, the addition or deletion of a new insurance coverage, the addition or deletion of an option (e.g., recapture with or without penalty). Prior to reassessing risk transfer, the actuary would first review the previous assessment to determine if it is still applicable after the change.

**Assessing the "Existence" of Risk Transfer**

To begin the exercise of assessing the "existence" of risk transfer the actuary would ask the following question:

*"Does the reinsurance contract protect the ceding company from negative financial impacts that result from one or more adverse events?"*

If the answer is a clear "yes" then risk transfer exists and conversely if the answer is clearly "no" then risk transfer does not exist. There are, however, many situations where the answer to this question is not simple and the actuary must perform a risk transfer assessment in order to prove the existence of risk transfer.

Key principle #1 states, "*There are several approaches that can be used to assess the existence of risk transfer*. All approaches, however, fit into two broad categories that are generally recognized in developed global insurance markets when assessing risk transfer. These categories are a) Qualitative Assessment and b) Quantitative Testing.

The usual process would be for the actuary, or other relevant professional, to first, qualitatively assess if risk transfer is "reasonably self-evident". If the actuary does not conclude that risk transfer is "reasonably self-evident" then the actuary must either expand the qualitative assessment or perform a quantitative test.

The actuary would not conclude that quantitative testing is always better proof than qualitative assessment or vice versa. The type of approach used will depend on the risk being transferred and the nature of the contract. There are situations where quantitative testing might lead to the wrong conclusion (e.g., a pandemic cover with a very high attachment point). In addition, the

actuary may find that a combined approach works best. For example, a qualitative assessment may be done for the overall contract with a quantitative test performed on one particular contract feature. One approach is often sufficient to prove the existence of risk transfer and several approaches rarely, if ever, sufficiently enhance the proof to justify the extra work.

Further discussion on how the actuary actually performs these assessments follows.

**Qualitative Assessment**

a) "Reasonably Self-Evident" Risk Transfer exists when it is intuitively obvious that the contract protects the cedant from future events that could adversely affect the cedant's financial position. In assessing "reasonable self-evidence" the actuary would focus on answering the question "if the reinsured event happened is protection afforded" and not on how probable the event is or how much risk is transferred. Low frequency/high severity risks are commonly transferred in reinsurance contracts and comprise most of the "reasonably self-evident" class of contracts. Examples of these contracts are casualty excess of loss reinsurance where coverage is in excess of an attachment point and there is no cap on losses and specific event reinsurance such as natural catastrophe covers.

   A "reasonably self-evident" qualitative assessment would be restricted to contracts that a) are done on arms-length terms, and b) where there are no potentially limiting risk transfer contract features as defined later in this paper. Contracts that do not meet these requirements must be assessed using either an expanded qualitative assessment (i.e., a separate assessment of the restrictive feature) or a quantitative assessment.

   If the above conditions are met then the actuary can conclude that the reinsurance contract has "reasonably self-evident" risk transfer and minimal documentation is required.

   The actuary would also be aware that for many "reasonably self-evident" risk transfer contracts, sophisticated computer models with which to perform a quantitative test may either not be available or may lead to inconclusive results.

b) If the above conditions are not met, then the actuary would next consider whether expanding the qualitative assessment will lead to a conclusion that risk transfer exists. This is typically the next step where a quantitative test usually can not be done either because relevant historical data are not available or the risk does not lend itself to mathematical models. Examples where an expanded qualitative assessment may be appropriate are reinsurance contracts with occurrence limits or contracts that would fit the "reasonably self-evident" conditions except they contain one or more potentially limiting features or are related party transactions.

   In risk limiting feature situations, the actuary can typically qualitatively assess the restrictive feature by isolating the financial impact of the feature under one or more adverse scenarios. In situations where reliable historical data or computer models are not available to make this assessment, the actuary will need to develop other comparables. As well, for related party transactions, it is important to assess the market consistency of the reinsurance premium being charged in relation to the risk being transferred.

   Qualitative assessments that are not "reasonably self-evident" usually require substantially more documentation to prove risk transfer exists. The actuary would err on the side of too much documentation rather than not enough in these situations.

**Quantitative Testing**

Quantitative testing is typically used to assess the existence of risk transfer when the risk being transferred lends itself to mathematical analysis and relevant data are available. Mortality reinsurance with an experience refund feature, quota share reinsurance with a sliding scale allowance and stop loss contracts are examples where quantitative testing is typically performed.

Computer models that perform scenario testing can be built to perform the test. In many cases, these models are derived from the pricing, valuation or Dynamic Capital Adequacy Testing (DCAT) work performed. Relevant data are either based on historical results of the business in question or similar business. Scenario testing can either be deterministic or stochastic and income statement, Conditional Tail Expectation (CTE) or Tail Value at Risk (TVAR) measures are all acceptable measures.

Commonly, quantitative tests will demonstrate that the cedant is "significantly" protected from adverse financial effects due to "plausible" insurance outcomes. "Significantly" and "plausible" will be defined based on the contract's particular characteristics. "Significantly" is relative to the financial outcome of an adverse scenario while "plausible" is defined in the DCAT Educational Note.

In addition to compiling results of a quantitative test the actuary would document how the testing supports the risk transfer conclusion.

**Assessing the "Extent" of Risk Transfer**

Once it has been proven that a risk transfer exists, then the actuary needs to have a clear view on the extent of the risk transfer for liability determination and financial statement presentation.

For P&C business, traditionally frequency and severity of loss (and hence the presence of risk transfer) have been assessed separately. However, current thinking (e.g., US GAAP and OSFI Guideline D-7) is that frequency and severity would be combined when assessing risk transfer. The uncertainty in both timing and amount risk would be present for the contract to be treated as reinsurance. Timing risk can generally be determined by looking at the contract features.

For Life business, it is not necessary to assess the effects of the transfer of timing risk and amount risk separately nor is it necessary to separately assess frequency and severity since the CALM method will accurately reflect the combination of these. The challenge is to appropriately define future cash flows, which may be scenario dependent, particularly when the reinsurance contract contains potential risk limiting features.

For both Life and P&C business, consideration of the extent of the risk transfer is as important for regulatory capital calculations as it is for liability determination and financial statement presentation. Current regulatory capital requirements (i.e., Minimum Continuing Capital and Surplus Requirement (MCCSR) for Life insurers and Minimum Capital Test for P&C insurers) assume that risk transfer in a reinsurance contract is absolute (i.e., the reinsurance risk is completely and permanently transferred to the reinsurer). This assumption is usually appropriate when reinsurance contracts are written at market terms which are the vast majority of reinsurance contracts currently in the Canadian marketplace. However, regulatory capital formulas do not reflect the wide array of possible limitations on risk transfer that can exist in reinsurance contracts. One example of where regulatory capital formulas break down in this regard is where the reinsurer contains an option that allows it to unilaterally alter the terms of the reinsurance (e.g., the reinsurer can force early recapture or commutation of claims).

**Limitations of Risk Transfer**

There is a wide variety of reinsurance contracts currently used in the Canadian marketplace. Many of these contain features that have the potential of limiting the risk transfer from the cedant to the reinsurer. Generally, these features are integral parts of the reinsurance contract and without them the reinsurer may not be willing to accept the risk or the price would be prohibitively high to the ceding company. It is important to note, however, that the mere presence of any of these features in a reinsurance contract does not mean that risk has not been transferred. Rather, their presence is an indication that additional work needs to be performed by the actuary to assess the "existence" and "extent" of the risk transfer. Some of these limitations are obvious (e.g., a corridor in a stop loss contract) while others need further study (e.g., a contractual recapture at the option of either party under pre-set conditions). Following is a list of potential risk limiting features of reinsurance contracts that is intended to give the actuary an indication of the types of features that require specific analysis in order to determine both the existence and extent of risk transfer. This list is not meant to be exhaustive but rather it is illustrative.

The list is organized into two broad categories: a) Terms Set in Advance and b) Experience Based Renewals.

*a) Terms Set in Advance*

i) Profit sharing

"Profit sharing" provisions are interchangeably referred to as profit sharing, profit commissions, experience rating provisions or experience refund provisions. Typically, the assuming company is willing to offer profit sharing to the ceding company due to the asymmetry of the spectrum of possible results where in the absence of such a feature, the probability and/or magnitude of favourable scenarios far exceeds the probability and/or magnitude of unfavourable scenarios.

For Life reinsurance, profit sharing arrangements are prevalent in the reinsurance of Group Life and A&S business and to a much lesser extent in Individual Life reinsurance contracts. Profit sharing amounts are determined by a pre-agreed formula, and take into account premiums, claims, and expenses. Percentages of profit sharing vary, and are often related to the size of the reinsured block of business and/or the amount of profit that emerges from the calculation.

For P&C reinsurance, profit sharing in reinsurance contracts is most often encountered on proportional contracts. Profit commission will return a pre-agreed percentage of any profits to the ceding company. Profits will be determined according to a pre-defined formula that takes into account premiums, claims and expenses. Other forms of profit sharing, such as experience rating refunds and no-claims rebates, may also be encountered, but are not common in the Canadian marketplace.

When assessing risk transfer, the actuary would be careful when there is a pre-determined expectation of large profit sharing. Such an expectation might be indicative of insufficient risk transfer. Also, absence of a loss carry-forward provision (used in the determination of the refund amounts) might reflect an expectation of the reinsurer that the possibility of loss in any one accounting period is remote. And finally, negative

experience refunds (i.e., the ceding company makes the assuming company whole for its losses) can negate risk transfer to the assuming company.

ii) Adjustability of reinsurance premiums and/or commissions

In these situations the reinsurance contract will either limit or adjust the amounts payable by/to the reinsurer under the contract. A typical example would be an adjustable commission on a proportional contract (with or without debit/credit carry forward provision), where the final commission payable to the ceding company will be based on the experience of the contract, within a pre-established range. A swing rate on a non-proportional contract will work similarly to the adjustable commission, except that the "adjusted" reinsurance premium rate to be applied to the contract will be based on the loss experience, within a pre-agreed range. Other examples include limits or caps on loss ratios, and loss corridor provisions on proportional contracts, which work similarly to a sliding scale commissions.

iii) Pre-set limits to timing of payments

Some contract features which restrict the timing of payments may indicate an intention to limit risk transfer. For example, some contracts may contain payment schedules or funds withheld provisions which may indicate such an intention. These and other contract features, however, may exist to facilitate the administration of the treaty, and do not necessarily indicate an intention to limit risk transfer. A clause that requires cash settlement on a quarterly basis for example, does not necessarily imply that risk transfer is not present, as long as the quarterly settlement has no restrictions and reflects the entire amount due according to the reinsurance contract. Professional judgment will be required to determine if any contract features that influence the timing of payments actually limit risk transfer.

iv) Expected duration of contract

For Life reinsurance, the presence of early recapture options might indicate that reinsurance is not intended for a long period of time. Recapture charges are typically assessed if the cedant exercises their recapture option. These charges usually take one of two forms: charges that are independent of past profitability of the reinsurance contract (e.g., a fixed per thousand of in force recaptured) or dependent on past profitability of the reinsurance contract. When the charges are independent of past profitability, risk transfer is not likely limited as long as the factors are reasonable. A cedant's motivation for this type of arrangement is typically a temporary need for capital, uncertainty regarding capital, or uncertainty with respect to a new product or product line. The cedant may be highly motivated to recapture business once their comfort level with the business increases. If the amount of the charges depends on past profitability, then this may be an indication that there has been limited intention to transfer risk on a permanent basis and further investigation is almost always necessary. For example, there is insufficient risk transfer if the assuming company can force recapture and is made whole for prior losses such as a deficit repayable on termination.

In P&C reinsurance, early recapture can be done through a commutation clause. Commutation clauses exist in most Ontario automobile excess of loss contracts, stating that accident benefit claims will be commuted back after a certain number of years, often

5 to 10 years. Other contracts allow commutation of claims or funds withheld after one or two years, sometimes in cases where no claims have been incurred. The funds withheld consist of a portion of the reinsurance premium that was paid into the fund and from which claims payments are made. This fund will be commuted back to the cedant when there are no claims. Generally, these clauses do not limit risk transfer but nevertheless the actuary would review these clauses when assessing risk transfer.

v) High front-end reinsurance commissions

For Life reinsurance, it is not uncommon to have reinsurance contracts that have payment schedules with high front-end allowances and accounts to which certain payments are applied. Such contracts may contain specific payment schedules, and therefore can be considered to have some element of financing. The presence of these provisions does not necessarily mean that risk transfer has been limited. High front-end allowances are often requested by cedants in order to offset their acquisition costs, especially when significant amounts of risk are reinsured. The cedant retains very little risk, and consequently may request significant up-front assistance in offsetting some of the cash costs associated with issuing a policy. Reinsurers are willing to support requests for high initial allowances, but are also keen to limit their lapse risk, which can create significant losses if early lapses are higher than expected. In these cases, the actuary should review the up-front reinsurance commissions to ensure they are reasonable.

vi) Counterparties

Contracts between companies that cede business back to the original cedant or an affiliate of the original cedant would be closely analyzed to ensure reserves and required capital is not being inappropriately arbitraged away.

vii) Other specific examples that the actuary should take care in assessing risk transfer are:

- coinsurance premiums that significantly exceed the premiums collected by the ceding company from its policyholders;
- Yearly Renewable Term (YRT) premiums that significantly exceed the ceding company's valuation mortality assumption;
- reinsurance allowances significantly lower than the ceding company's allocable direct expenses net of the reinsurer's own expenses (if coinsurance premiums are on original terms);
- limits on proportional contracts, especially absolute dollar, on aggregate claims reimbursement (e.g., a cap on a single catastrophic event);
- stop loss contract whereby the attachment point is above the ceding company's valuation assumption or there is a short termination notice (i.e., if experience is approaching the trigger, then the contract is cancelled and the trigger is reset at a higher level just to get capital relief);
- claims fluctuation reserves funded upfront where an extra premium is not justified;
- reinsurance between affiliated companies; and
- reinsurance transacted at non-market terms.

*b) Experience Based Renewals*

i) Future terms based on past experience

Reinsurance premium rates that are dependent on past experience are common. Where contracts are annually renewable, this does not limit the extent of the risk transfer. However, if reinsurance premium rates are guaranteed to recover any portion of prior year losses, then risk transfer is limited unless the ceding company has the ability to retain the business or place the reinsurance elsewhere.

Multi-year contracts where renewal is not at the cedant's option would also be closely reviewed by the actuary. Although a multi-year contract does not restrict risk transfer by itself, this type of contract often includes other features that would limit risk transfer. For example, an excess contract may call for a significant increase in premium should there be a loss in a prior year, thereby virtually guaranteeing payback. Another example would be a proportional contract with a commission debit/credit carry forward provision.

ii) Forced renewals

These provisions require that if a contract is in deficit, that the cedant is obligated to cede future business to the reinsurer until at least the losses are eliminated. The purpose of these provisions is to prevent a cedant from moving the business before the reinsurer can recover the deficit. If the future business ceded is at market terms then it is possible that risk transfer is not limited but the actuary needs to assess each case individually.

## OTHER ISSUES

### Side Agreements

Reinsurance contracts may be modified or amended by other agreements, sometimes subsequent to the effective date of the original contract. These modification agreements, generally referred to as "amendments", are clearly documented, sometimes in the form of a letter, and are usually included with or attached to the original reinsurance contract papers. In this report, amendments are considered part of the reinsurance contract.

For the purpose of this section, side agreements are agreements made between a cedant and a reinsurer that are not directly incorporated into the reinsurance contract. Side agreements can be either written or verbal. Side agreements can obscure or misrepresent the nature or intent of a reinsurance contract. In extreme situations, side agreements may even negate any true transfer of risk. As well, they can cause confusion and ambiguity in administration and at time of claim settlement

.In order to comply with the SOP, the actuary would pay special attention to all side agreements, particularly analyzing their intent, and be suspicious when there is an apparent lack of disclosure as it may indicate appropriate accounting treatment may not be followed. To reiterate a statement made under Key Principle # 3 – "The actuary must make a reasonable effort to be informed of each and every commitment made by any authorized party."

A special case of a side agreement is one which places a requirement on the ceding company to enter into future reinsurance contracts with the reinsurer. Side agreements of this type could be an indicator that risk transfer on an existing contract is limited, possibly even non-existent, particularly if the requirement depends on the historical profitability of an existing reinsurance

contract. The task force feels that risk transfer is not impaired due to the existence of such a requirement provided the future reinsurance be transacted on market terms at that time. However, if the side agreement requires the future reinsurance agreement to be on non-market terms, then this likely leads to limited risk transfer under the current reinsurance agreement and the actuary would assess both the existence and extent of risk transfer as impacted by this option.

Both the Office of Superintendent of the Financial Institutions (OSFI) and the Autorité des Marchés Financiers (AMF) strongly discourage the use of side agreement used in conjunction with reinsurance contracts.

**Mirroring and Communication**

Conceptually speaking, ceded reinsurance liabilities determined by the cedant would be substantially similar to assumed reinsurance liabilities determined by the reinsurer for the same contract. If these liability amounts are exactly equal, it is often referred to as mirror reserving, or mirroring. The mirroring concept is based on the premise that both the cedant and the reinsurer would have exactly the same view of both the risk(s) being transferred and the value of those risk(s). In a rules-based accounting and valuation environment, where the method and assumptions used in liability determination are prescribed, this concept has considerable merit. For Life reinsurance, this is especially true in situations where the reinsurer has limited access to policy data. In such instances, the best source of liability calculations is, in fact, the ceding company. For P&C reinsurance, the reinsurer receives the case reserves from the ceding company, and could also rely on the ceded Incurred But Not Reported (IBNR) calculation from the cedant.

In the US, a few states require mirror reserving for statutory reserves. However, the prevailing opinion in the international actuarial community is that mirror reserving should not be required.

For Life reinsurance in Canada, in particular individual business, mirroring is likely to be inappropriate. First, each actuary is responsible for setting assumptions for all contingencies and for all cash flow payments based on his or her own best estimate assumptions. These best estimate assumptions are based at least, in some part, on each company's experience and the actuary's view of future experience. Differences can, and would, certainly occur for mortality, morbidity, lapse, expense and investment income assumptions. Expenses incurred and investment income earned by the cedant and the reinsurer will be different resulting in different valuation assumptions being used by each actuary. What may not be obvious is why there are differences in mortality, morbidity and lapse assumptions. In the cedant's case, experience is based on its own observed mortality, morbidity and lapses, each of which is influenced by its underwriters, sales force, and product characteristics. The reinsurer's experience, however, will be based on the concept of pooling of risks across companies, and the pooled experience that contributes to the assumptions of the reinsurer can, and likely will, be different from that of the cedant. As a result, legitimate differences do occur between the ceded and assumed reserves due strictly to assumption differences. Even if by coincidence the best estimate assumptions and margins for adverse deviations are similar enough that the initial ceded and assumed liabilities are close enough where it is perceived that mirroring is occurring, differences can, and likely will, emerge over time as assumptions or margins are revised to reflect the most recent experience.

For P&C reinsurance, although the reinsurer could easily rely on the cedant's IBNR estimate for proportional business, each actuary may have his or her own view of the expected development

of the particular treaty. The reinsurer's assumption will also be based on an aggregation of treaties, which will not necessarily develop similarly to the sum of the individual treaties. For non-proportional reinsurance, reliance on the ceding company's estimate is further complicated by the layering since a reinsurer may not be participating on all layers, or may have a different share of each layer. A cedant's IBNR estimate will also be based on a small amount of excess information such that the data set is too small to be credible, whereas the reinsurer will combine all treaties to produce more credible sets of data. This will usually result in a different set of assumptions.

Without a mirroring requirement and in the absence of communication between the actuaries, it is possible that the cedant and reinsurer actuaries have quite different views on the risk that is being transferred. This can result in material differences between the ceded liabilities determined by the cedant actuary and the assumed liabilities determined by reinsurer actuary. This may or may not be appropriate. A mirroring environment does not prevent these differences but it has the advantage of highlighting these differences quickly, as there is a process on at least an annual basis where there is a comparison of the reserves.

The task force's view is that a principles-based environment does not have a "natural" safeguard that ensures the cedant and reinsurer actuaries have a similar view of the risk being transferred. There are, however, processes that can be put in place that mitigate or eliminate this concern. The most fundamental safeguard is one of data integrity. For Life reinsurance, a validation process that can and would be performed by the administration area involves a reconciliation at a high level of policy counts, reinsurance amounts at risk, and in-force premiums by, say treaty, will confirm at a minimum the inventory. This reconciliation in theory would reflect only timing differences, as most reinsurance in Canada is transacted electronically. Nonetheless, it does serve as a useful check.

For P&C reinsurance, it is often appropriate for cedant and reinsurer actuaries to confer on unusually large individual losses or recent catastrophic events in order to ensure that appropriate and sufficient provisions for losses are recognized. Often reinsurers do not have the same level of data as the cedants, as they are one step further removed from the client. Consequently reinsurers place considerable reliance on the cedant for access to this information.

For reinsurance that is transacted on a coinsurance or proportional basis, the contingencies generally mirror those of the ceding company. Again, it is important to identify the terms of coverage.

A second important safeguard is communication between the cedant and reinsurer actuaries. This is most important for reinsurance contracts that are customized to the cedant's risk profile such that they are not necessarily straightforward. Such cases have the greatest opportunity for differences in interpretation. Mitigation techniques can involve communication between administration and pricing staff at both companies, but could also involve communication between the Appointed Actuaries of both the cedant and the reinsurer. It is the responsibility of the actuaries at both the cedant and reinsurer to ensure there is a common understanding of the risks being reinsured, and that the interpretation of those risks is consistent. Each would be familiar with the contracts, and it would be appropriate that, for any new arrangements that are outside what would be considered standard reinsurance arrangements, the actuaries of both companies concur on the risks transferred. For material or unusual reinsurance arrangements it is best practice for the actuaries of the cedant and the reinsurer to discuss the risk transfer aspects

of the reinsurance contract at inception of the contract and any time afterwards where a material change has occurred to the contract.

**Bifurcation**

There has been considerable discussion recently in some jurisdictions over the bifurcation of contracts. Bifurcation involves separating contracts into their basic constituents, including identification of those portions that are insurance versus those that are not. One purpose of this is to identify those portions of contracts that might not have risk transfer elements. Those aspects of the contracts then would be considered non-risk-transfer, and might be subject to deposit accounting. This might negate some reserve or capital credits taken by the ceding companies.

In reality, reinsurance contracts are not intended to be bifurcated. They are only valid contracts in their entirety. Individual components would not necessarily be intended to be issued on their own. They are only intended to be available as part of an entire package.

Suppose Company A ceded business to Reinsurer B on a coinsurance basis. Suppose also that Company A received an upfront commission of 150% of the first year commission. In order for Reinsurer B to achieve its profit targets, it needs to charge a higher premium from Company A in the renewal years. Bifurcation, in an extreme sense, might suggest that each risk would be unbundled. In this instance, the recovery of the upfront commission would be unbundled from the pure insurance risk. It would then be required to be treated as a loan, and non-insurance accounting would prevail.

This example illustrates the potential impact of contract bifurcation. A reinsurer would never only offer a loan. An upfront commission or allowance is only obtainable by the ceding company if there is an accompanying risk contract. The upfront commission is the result of the ceding company wishing to defray some of its own upfront cash strain. One can also view this as the reinsurer in a coinsurance situation taking some share of the upfront underwriting costs, sales costs, and agent commissions that are incurred by the ceding company.

**Reinsurance Counterparty Risk**

While reinsurance reduces both earnings volatility and probability of ruin, it exposes the cedant to credit risk either because the reinsurer will be unable to pay claims or because the amount reimbursed will differ from that which the cedant has expected to collect.

The SOP require the actuary to consider all cash flows, including reinsurance cash flows, when setting reserves. Paragraph 2130.05 states:

> *The comprised cash flow should include the effect of:*
>
> *retrospective premium, commission, and similar adjustments,*
>
> *experience rating refunds,*
>
> *reinsurance ceded,*
>
> *subrogation and salvage*
>
> *the exercise of policyholder options, and*
>
> *the deemed termination at the end of the term of its liabilities of each policy then in force.*

The SOP further require the actuary to consider the financial condition of its reinsurers. Paragraph 2130.16 states:

> As respects consistency, the actuary would, for example, ensure that the policy liabilities
>
> > provide for any risk of asset depreciation (C-1 risk) and of interest rate change (C-3 risk) for any deposit liabilities which the actuary did not value and which are separately reported without such provision, and
> >
> > provide consistently for cash flow gross of reinsurance and reinsurance cash flow, except that reinsurance cash flow would also take account of the financial condition of the reinsurer.

Paragraph 2130.30 amplifies this:

> The recovery on account of reinsurance ceded would take account of the financial condition of the reinsurer.

For P&C insurance, SOP Section 2200 provides specific direction on the valuation of policy liabilities. This section re-emphasizes that policy liabilities reflect reinsurance, but a specific margin for adverse deviations is required to be placed on the amount of reinsurance ceded. Paragraph 2250.05 specifies that margins for adverse deviations are required for recovery from reinsurance ceded, and 2250.08 and 2250.10 specify that the margin be determined as a percentage (0-15%) of the best estimate ceded claim and premium liabilities. The degree of margin depends on the actuary's assessment of the uncertainty of recovery (e.g., as evidenced by the history of disputes with a reinsurer). This would also take into account the credit worthiness of the reinsurer's.

For Life insurers, there is no further guidance related to reinsurance provided in section 2300.

The risk that future reinsurance receivables (or ceded unpaid claims) are not recoverable is to be provided within the policy liabilities. The intent of the SOP is that the policy liabilities include a provision for future reinsurer default, similar to any other default provision. Similar considerations apply when taking credit for future receivables from policyholders (including reinsurers) arising from deficit recoveries, experience rating, etc. (paragraph 2130.25).

This task force believes that in normal circumstances, any credit provision be represented as a margin against best estimate assumptions. In the event that likelihood is high that a future reinsurance receivable will not be realized in its entirety, it is the joint responsibility of the actuary and the accountant to ensure that such individual situations are reflected appropriately in the balance sheet.

When estimating if a credit provision is necessary, and the amount of such a provision, the actuary would consider the following factors:

- The rating from rating agencies such as Standard & Poor's or A.M. Best;
- Any history of dispute on claims;
- Whether the reinsurer or book of business is in runoff;
- The expertise of the reinsurer;
- The diversification of the reinsurer;
- The quality of the reinsurer's retrocession; and

- The MCCSR/TAAM ratio for a life reinsurer, or the MCT/BAAT ratio for a P&C reinsurer.

The above situation would be contrasted to the situation where the insurer has paid a claim and is awaiting money from the reinsurer (current reinsurance receivable). In such an instance, if a claim is in dispute, or the collection is outstanding for a certain number of months, accounting rules would dictate setting up a reserve for bad debt. Although the advice of the actuary may be sought for establishing this reserve, the bad debt account would not be part of the actuary's estimate of policy liabilities.

Concentration risk is not intended to be the same as counterparty credit risk. Concentration risk is the risk of excess exposure to a single counterparty, and needs to be considered and addressed by the company's risk management policies. Good risk management practice would include the monitoring of counterparty exposure, procedures for the approval of additional counterparties, and ongoing monitoring of counterparties either for credit or for impacts due to large-loss events.

## APPENDIX

| Date | Author | Document title |
|---|---|---|
| No date | Moore, Drab, Christie, Shah | IAS Applied to Property and Casualty Insurance - Overview of Reserving Issues |
| No date | AICPA | Evaluating Risk Transfer in Reinsurance of Short-Duration Contracts |
| Mar 5, 2004 | ACLI, NAMIC, PCIAA, RAA | Response to AICPA Paper |
| Mar 29, 2004 | Myles J. Tilley, CPA | Property and Casualty Reinsurance Accounting Guidance: A Historical Perspective |
| May 18, 2004 | AAA | Response to the AICPA Paper |
| Dec 7, 2004 | NAMIC, RAA | Accounting and Disclosure for Property and Casualty Reinsurance Contracts |
| May 25, 2005 | AAA | Proposed Survey on Risk Transfer for Finite Reinsurance Products |
| June 3, 2005 | Culp & Heaton | The Uses and Abuses of Finite Risk Reinsurance |
| June 13, 2005 | AAA | Request for Suggestions on Risk Transfer Analysis |
| Aug 1, 2005 | AAA | Risk Transfer in P&C Reinsurance: Report to the Casualty Actuarial Task Force of the NAIC |
| Sept 1, 2005 | Eastwood & Clyne | Magazine Article: The Problem with Financial Reinsurance |
| Oct. 31, 2005 | AAA | Reinsurance Reserve Credit |
| Nov. 2, 2005 | LePan | Letter to Senate Banking, Trade and Commerce Committee on Finite Reinsurance |
| Nov. 1, 2005 | AAA | Reinsurance Attestation Supplement 20-1: Risk Transfer Testing Practice Note |
| Nov. 1, 2005 | Tillinghast Towers Perrin | Update: New NAIC Reporting Requirements for Risk Transfer |
| Nov 30, 2005 | IAA | Practice Guideline: Accounting for Reinsurance Contracts under IFRS |
| Jan. 1, 2006 | Group of Thirty | Executive Summary: Reinsurance and International Financial Markets |
| May 26, 2006 | FASB | Bifurcation of Insurance and Reinsurance Contracts for Financial Reporting |
| July 23, 2006 | IAIS | Guidance Paper on Risk Transfer, Disclosure and Analysis of Finite Reinsurance (Draft) |

## RECOMMENDATIONS AND OPINIONS OF THE CIA TASK FORCE ON THE APPROPRIATE TREATMENT OF REINSURANCE

### CIA Standards of Practice (SOP)

The task force believes that the current SOP, when properly applied, are adequate with respect to reinsurance. However, in an effort to provide further clarity and guidance with respect to reinsurance, the task force recommends that they be augmented in two ways:

- Consider adding a section to the SOP that explicitly states that when determining policy liabilities, the actuary must consider the entire policy contract along with any other contracts attached to, or subsequent to the contract, including reinsurance contracts and side agreements. While the task force members believe this is already implied by the SOP, we believe a direct statement addressing this "head on" adds further clarity.
- Consider eliminating differences between the Life and the P&C sections of the SOP, particularly with respect to the level of margins necessary to provide for reinsurance counterparty risk. For P&C insurance, a specific margin range is noted in subsection 2250 whereas the Life insurance sections are silent on this topic.

### Principle versus a Rules-Based Approach

The task force members strongly believe that it is not advisable to espouse a rules-based approach in assessing the existence of risk transfer. A rules-based approach is not consistent with current Canadian and international accounting rules, and a rules-based approach cannot be comprehensive enough to capture all situations. In the case of potential risk limiting features, it would be impossible to anticipate the labelling, use, circumstances and effect of every risk limiting feature and as a result a rules-based approach would tempt practitioners to "manage to the test." Rather, the task force members believe that maintaining the current principles-based framework for making professional judgement is the prudent approach.

### Regulatory Capital Formulae

The task force members believe that as long as portions of regulatory capital formulae remain factor-based then they may not recognize the fact that risk transferred in a reinsurance contract is not always completely and permanently transferred. Moreover, the task force members believe that the assessment of complete and permanent risk transfer should be left to the judgement of the Appointed Actuary when making regulatory capital calculations. External Audit, External Actuarial Review and, for Life business, the MCCSR Report that is required beginning at 2006 year-end provide sufficient controls that reasonable judgement is being applied.

### Mirroring of Liability Amounts

The task force members strongly believe that mirroring of liability amounts (sometimes referred to as "reserve mirroring") by the cedant and the reinsurer is <u>not</u> appropriate for accounting purposes. Reserve mirroring is inconsistent with Canadian GAAP and IFRS principles and, in

the task force's view, will in many cases lead to inappropriate liabilities for the reinsurer (assuming the reinsurer must mirror the amounts calculated by the cedant).

**Bifurcation of Reinsurance Contracts**

The task force members strongly believe that requiring bifurcation of reinsurance contracts into insurance and financial components is not appropriate for accounting purposes. Bifurcation is not required under Canadian GAAP and IFRS principles and the complexity, impracticality and cost of broad application of the bifurcation of reinsurance contracts in financial reporting is likely to greatly exceed any benefit derived from increased transparency.

*Updated Draft Educational Note*

# IFRS 17 Risk Adjustment for Non-Financial Risk for Property and Casualty Insurance Contracts (clean)

## Committee on Property and Casualty Insurance Financial Reporting

**September 2021**

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*The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.*

# MEMORANDUM

**To:** Members in the property and casualty insurance area

**From:** Steven W. Easson, Chair
Actuarial Guidance Council

Sarah Ashley Chevalier, Chair
Committee on Property and Casualty Insurance Financial Reporting

**Date:** September 10, 2021

**Subject:** **Updated Draft Educational Note: IFRS 17 Risk Adjustment for Non-Financial Risk for Property and Casualty Insurance Contracts**

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The Committee on Property and Casualty Insurance Financial Reporting (PCFRC) has prepared this draft educational note to provide guidance related to the measurement and presentation of risk adjustment for non-financial risk under International Financial Reporting Standard® (IFRS) 17 for property and casualty (P&C) insurers.

This draft educational note is written from the perspective of Canadian actuaries and is not intended to duplicate any other guidance. Additional information can be found in IAA guidance or other CIA documents. The draft educational note *Compliance with IFRS 17 Applicable Guidance* provides guidance to actuaries when assessing compliance with IFRS 17. It is applicable to all educational notes pertaining to IFRS 17 and members are encouraged to review it prior to reading any educational note related to IFRS 17.

Guidance from this draft educational note would be considered with the following CIA educational notes:

- CIA draft educational note *Application of IFRS 17 Insurance Contracts*; and
- PCFRC guidance on matters relating to IFRS 17, when such guidance is issued as draft educational notes.

This draft educational note is structured in sections as follows:

- Section 1 provides an introduction.
- Section 2 provides guidance related to transitioning from IFRS 4 to IFRS 17.
- Section 3 provides guidance related to general consideration related to risk adjustment for non-financial risk (RA).
- Section 4 provides guidance on estimating RA for insurance contracts issued using quantile methods.

- Section 5 provides guidance on estimating RA for insurance contracts issued using cost of capital method.
- Section 6 provides guidance on estimating RA for insurance contracts issued using margin method.
- Section 7 provides guidance on estimating RA for reinsurance contracts held.
- Section 8 provides guidance on considerations for catastrophe reinsurance.
- Section 9 provides guidance on combining approaches and methods.
- Section 10 provides guidance on quantification of the confidence level.

A preliminary version of the draft educational note was shared with the following committees for their review and comments, and presented to the Actuarial Guidance Council (AGC) in the months preceding its approval:

- Committee on Life Insurance Financial Reporting
- Committee on Risk Management and Capital Requirements
- Committee on the Appointed/Valuation Actuary
- International Insurance Accounting Committee
- Worker's Compensation Committee
- Group Insurance Practice Committee

A preliminary version of the draft educational note was also shared with the staff of the Accounting Standards Board (AcSB) to broaden consultations with the accounting community. Given that this draft educational note provides actuarial guidance rather than accounting guidance, the AcSB staff review was limited to citations of and consistency with IFRS 17. CIA educational notes do not go through the AcSB's due process and therefore, are not endorsed by the AcSB.

The PCFRC is satisfied it has sufficiently addressed the material comments received by the various committees and the AGC.

The creation of this cover letter and updated draft educational note has followed the AGC protocol for the adoption of educational notes. In accordance with the CIA's *Policy on Due Process for the Approval of Guidance Material other than Standards of Practice and Research Documents*, this draft educational note has been prepared by the PCFRC and has received approval for distribution from the AGC on July 30, 2021.

The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note, however, that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members. As standards of practice evolve, an educational note may not reference the most current version of the

Standards of Practice; and as such, the actuary should cross-reference with current Standards. To assist the actuary, the CIA website contains an up-to-date reference document of impending changes to update educational notes.

Questions or comments regarding this draft educational note may be directed to Sarah Ashley Chevalier at sarahchevalier@axxima.ca or Veronika Molnar (chair of the working group) at veronika.molnar@aviva.com.

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## 1. Introduction

IFRS 17 Insurance Contracts (IFRS 17) establishes principles for the recognition, measurement, presentation, and disclosure of insurance contracts. The purpose of this draft educational note is to provide practical application guidance on Canadian-specific issues relating to the IFRS 17 risk adjustment for non-financial risk (RA) for property and casualty (P&C) insurers. References to specific paragraphs of IFRS 17 are denoted by IFRS 17.XX, where XX represents the paragraph number.

The requirement for the RA, which is a defined term in IFRS 17 Appendix A, is set forth in IFRS 17.37, "An entity shall adjust the estimate of the present value of the future cash flows to reflect the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk."

Further clarification is provided in IFRS 17.B86–B92. These paragraphs emphasize that the RA relates only to non-financial risk. Insurance risk, lapse risk, and expense risk are listed as examples of risks that are included, whereas operational risks and market risks are excluded. IFRS 17.B91 clearly states that IFRS 17 does not prescribe the estimation technique(s) used to determine the RA, and IFRS 17.B92 notes that "an entity shall apply judgement."

IFRS 17.B91 states that the RA would have the following characteristics:

(a) risks with low frequency and high severity will result in higher risk adjustments for non-financial risk than risks with high frequency and low severity;

(b) for similar risks, contracts with a longer duration will result in higher risk adjustments for non-financial risk than contracts with a shorter duration;

(c) risks with a wider probability distribution will result in higher risk adjustments for non-financial risk than risks with a narrower distribution;

(d) the less that is known about the current estimate and its trend, the higher will be the risk adjustment for non-financial risk; and

(e) to the extent that emerging experience reduces uncertainty about the amount and timing of cash flows, risk adjustments for non-financial risk will decrease and vice versa.

The RA is explicitly included in the insurance contract liabilities and is disclosed per the requirements of IFRS 17.100–107 and IFRS 17.119.

Chapter 4 of the CIA Draft Educational Note *Application of IFRS 17 Insurance Contracts* (Draft Ed Note *IFRS 17 Application*) provides general guidance about the RA. The Draft Ed Note *IFRS 17 Application* adopts without modification the exposure draft of the proposed *International Actuarial Note (IAN) 100 – Application of IFRS 17 Insurance Contracts* of the International Actuarial Association (IAA).

In this draft educational note, "approach" is used to denote an overall way of addressing the RA. In practice, "technique" and "method" are often used interchangeably, however in this draft educational note, "method" is used consistently to refer to the detailed process (including calculations) to determine and allocate (if necessary) the RA.

Within the IAA guidance, question 4.3 of the Draft Ed Note *IFRS 17 Application* states (emphasis added):

> **This general guidance means that there is no single right way for an entity to set the risk adjustment**. In general, there are other important considerations that will be relevant to how an entity determines its approach to estimating the risk adjustment:
>
> - consistency with how the insurer assesses risk from a fulfilment perspective;
> - practicality of implementation and ongoing re-measurement; and
> - translation of risk adjustment for disclosure of an equivalent confidence level measure.
>
> **Therefore, a variety of methods are potentially available, although their ultimate usage depends on the extent to which they meet the criteria above, given the specific circumstances of the company**. Potential methods include, but are not limited to, quantile techniques such as confidence level or CTE [conditional tail expectation], cost of capital techniques, or even potentially simple techniques such as directly adding margins to assumptions or scenario modelling.

Regardless of the estimation method, the actuary would ensure that the resulting RA represents the compensation the entity requires for accepting uncertainty in the amount and timing of the cash flows arising from non-financial risk (uncertainty related to non-financial risk). This draft educational note provides specific application guidance, as well as background and general information, to help inform Canadian actuaries when exercising judgment for derivation of the RA.

Equally important to the objective of this draft educational note is understanding what the draft educational note is not intended for. Consistent with IFRS 17, this draft educational note:

- does not prescribe which approach or method to use for the RA in the aggregate or for the RA by portfolio of insurance contracts[1] (portfolio) or group of insurance contracts[2] (group);
- does not include statistical detail of the methods included herein;
- does not include detailed descriptions of how any given approach or method would be applied;
- does not contain an exhaustive list of the approaches or methods that may be acceptable for deriving the RA. For additional detail (including underlying statistical theory) regarding quantile methods, the cost of capital method, internal models, and diversification, all of which may be important for the actuary responsible for deriving the RA, the actuary is referred to the basic education material of the actuarial societies

[1] IFRS 17 defines portfolio as "Insurance contracts subject to similar risks and managed together."

[2] IFRS 17 defines groups of contracts as "A set of insurance contracts resulting from the division of a portfolio of insurance contracts into, at a minimum, contracts issued within a period of no longer than one year…"

as well as the IAA monograph titled *Risk Adjustment for Insurance Contracts under IFRS 17* (IAA *Risk Adjustment* monograph); and

- does not address the wording of the Appointed Actuary's (AA's) Expression of Opinion.

In writing this draft educational note, the PCFRC Risk Adjustment Subcommittee followed these guiding principles:

- Consider Canadian-specific perspectives rather than simply repeating international actuarial guidance.
- Develop application guidance that is consistent with IFRS 17 and applicable Canadian actuarial *Standards of Practice* and educational notes without unnecessarily narrowing the choices available in IFRS 17.
- Consider practical implications associated with the implementation of potential approaches and methods; in particular, ensure that due consideration is given to options that do not require undue cost and effort to implement.

## 2. Transition from IFRS 4 to IFRS 17

The valuation of insurance contract liabilities for fiscal years effective prior to January 1, 2023, are subject to IFRS 4, and are therefore guided by the current CIA Standards of Practice and educational notes. As such, discussion in this draft educational note about processes under IFRS 4 (such as the use of margins for adverse deviations (MfADs)) pertain to Canadian accepted actuarial practice prior to the adoption of IFRS 17.

Section 9 of the draft educational note *Comparison of IFRS 17 to Current CIA Standards of Practice* provides a comparison of MfADs and RA:

> IFRS 17 requires the entity to adjust the present value of future cash flows to reflect "the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk" (IFRS 17.37).
>
> The corresponding concept in the current CIA Standards of Practice is the PfAD [provision for adverse deviations], which takes account of the effect of uncertainty of the assumptions and data in determining the liability.
>
> While the concepts are similar, there are important differences. One difference is that the IFRS 17 risk adjustment for non-financial risk only includes provision for non-financial risk, while PfADs cover uncertainty in both economic and non-economic assumptions.

Although the approach selected to derive the RA may, in the end, be similar to the approach used under IFRS 4, IFRS 17 requires the RA to reflect the compensation the entity requires for taking on risk as opposed to margins that cover adverse deviations.

If the actuary uses IFRS 4 MfADs as the starting point for calculating the IFRS 17 RA, then the actuary would assess the questions posed in Section 9.2 of the draft educational note *Comparison of IFRS 17 to Current CIA Standards of Practice*:

- Is the current level of PfAD consistent with the compensation the entity requires for bearing uncertainty?
- Are the diversification benefits included in current PfADs consistent with those that would be reflected in IFRS 17?
- How would the confidence level (to satisfy disclosure requirement of IFRS 17.B92) inherent in the current PfADs be determined?
- IFRS 17 requires reinsurance contracts held to be measured as separate contracts. How would the PfAD appropriate to the net liability be split between the direct and ceded contracts?
- Are any adjustments needed for pass-through features?

The CIA standards of practice relevant to IFRS 4 may provide insight for establishing margins under IFRS 17.[3] In the margin-setting process for a given group, the actuary would look to the risk exposure of the broader entity to consider whether there are potential diversification benefits to reflect in the entity's RA. (See Section 3.2.2.) As noted previously, IFRS 17 does not specify the estimation technique(s) used to determine the RA. Some Canadian actuaries may find it operationally efficient to continue to apply margins either to derive the total RA or to allocate the total RA between portfolios and/or groups. However, other considerations, such as the suitability of the margins to reflect an entity's requirement for compensation and the margins' associated confidence level, which is required for disclosures, would also be considered. Use of margins would be acceptable if the resulting RA satisfies the five characteristics defined in IFRS 17.B91. Note that existing Canadian IFRS 4 guidance for setting MfADs is based on similar considerations.

In practice, under IFRS 4, most Canadian entities are unlikely to have previously identified a specific metric or set of metrics that explicitly defines the compensation the entity requires for bearing non-financial risk. Such metrics or articulation of risk appetite, if they exist, would likely consider all risks including financial risks and thus not be directly comparable to the scope of the RA. Therefore, the actuary would need to justify how the selected margins and/or the resulting confidence level of the RA reflect the entity's compensation required for the uncertainty related to non-financial risk.

## 3. General considerations

### 3.1 Measurement approach

In supporting an insurer to achieve the requirements specified in IFRS 17.37, the actuary would (1) understand the compensation required by the entity for the uncertainty related to non-financial risk and (2) develop an RA that reflects such compensation. The compensation the entity requires is a subjective assessment of an entity's own risk appetite.

There is more than one way for an entity to develop a price for that risk. Questions 4.9 and 4.13 in the Draft Ed Note *IFRS 17 Application* provide further general guidance. The answers to these questions refer to the entity's pricing as a potential reference point for measuring the entity's

[3] Further detail contained in Appendix 1.

risk aversion and/or compensation requirements. The actuary would consider whether the compensation the entity requires reflects any pricing concessions due to competitive market pressure and/or price discounting in pursuit of aggressive market positioning. One view is that the actual pricing is a market observable evidence of the compensation the entity requires. An alternative view is that an entity may temporarily accept other than its theoretical steady-state compensation requirements, and that the RA would reflect the latter. Depending on the approach followed, the experience for a given group of contracts or portfolio may cause the assumptions underlying the compensation requirements of the entity to change over time.

Generally, entities require compensation for bearing the uncertainty, however, some entities might not require a compensation. To determine if a zero RA may be appropriate for such entities, in addition to the entity's risk appetite, their pricing and capital management policies/practices may be considered, as well as the contract boundary of the insurance contract and the policy-holder's ability to transfer risk to another entity on renewal. If the contract has a short contract boundary (the entity is able to recover deficits through future premiums, however these recoveries are outside of the contract boundary), or if the entity holds additional capital to support uncertainty in the future cash flows, a non-zero RA may be required. Further guidance that may be useful for entities that do not require compensation for bearing uncertainty can be found in the *draft educational note on the Application of IFRS 17 Insurance Contracts for Public Personal Injury Compensation Plans*[4].

It is necessary that the RA at each reporting date satisfies the overall requirements of IFRS 17 for measurement, presentation, and disclosure of insurance contracts. In selecting a particular approach, the actuary would consider the accounting measurement requirements for the RA as well as the aggregated presentation and disclosure requirements. (Section 3.7 addresses RA requirements specific to the premium allocation approach (PAA).)

The unit of account for IFRS 17 is usually the group or a single insurance contract. In all the following sub-sections within Section 3, the unit of account could refer to a different group level whether it applies to the liability for remaining coverage (LRC) or the liability for incurred claims (LIC) calculations. For LRC, it refers to a group of insurance contracts (may be a single one), onerous or not, per IFRS 17.16. For LIC, it may refer to the same group of contracts in some particular situations but most of the time it refers to a portfolio.

### 3.1.1 Measurement requirements related to the RA – unit of account

The measurement requirements (and some presentation and disclosure requirements) are applied at the unit of account level. For the RA, the unit of account has the following implications:

- The RA is determined on initial recognition and at each reporting date and reported for each group (IFRS 17.32 and IFRS 17.40).

[4] Canadian Institute of Actuaries *Draft Educational Note: Application of IFRS 17 Insurance Contracts for Public Personal Injury Compensation Plans* (2020).

- The RA for a group influences the measurement of the contractual service margin (CSM) and/or the loss component for the group at initial recognition (IFRS 17.38) and subsequent measurement (IFRS 17.B96(d)).
- For contracts initially recognized in a period, the RA is required to satisfy the grouping requirements of IFRS 17.16 (i.e., to identify onerous contracts) unless the PAA measurement is used in which contracts are assumed to not be onerous unless facts and circumstances indicate otherwise.

IFRS 17.24 allows the fulfilment cash flows (of which the RA is a part) to be determined at a higher level of aggregation than the group and then allocated to the relevant groups, provided that the allocations result in appropriate fulfilment cash flows in the measurement of the group.

### 3.1.2 Disclosure requirements related to the RA – aggregate/entity level

While the measurement requirements of IFRS 17 require an RA for each unit of account, most of the presentation and disclosure requirements of IFRS 17.78-109 are typically met at a more aggregated level, such as portfolio or entity level.

IFRS 17.117(c)(ii) specifically requires disclosure of the approach (which using the terminology of this educational note would also include method) used to determine the RA.

While the approach selected needs to reflect the compensation that the entity requires for bearing the uncertainty about both the amount and the timing of the cash flows arising from non-financial risk, there is no requirement to explicitly disclose these two components of the RA separately.

IFRS 17.119 requires disclosure of the confidence level corresponding to the reported RA. Depending on the approach and method used, the confidence level will be either an explicit input to the RA calculation or an implicit result of the calculation.

### 3.1.3 Selection of a measurement approach

The actuary may view the aggregate entity level perspective as the primary basis for determining the RA (perhaps driven by disclosure requirements or aligned at the level at which the entity thinks about compensation). With an aggregate approach, the actuary would need to allocate the total RA to the units of account to satisfy the IFRS 17 measurement requirements. Some of the methods described in this draft educational note are more aligned with an aggregate approach (e.g., quantile methods) than with an approach focused on the unit of account.

Alternatively, the actuary may develop the RA at the unit of account level to more directly facilitate the measurement requirements of IFRS 17. The margin method can be used for a unit of account approach. To the extent that the entity chooses to reflect the benefits of diversification in its RA, the margins would be developed such that they reflect diversification among the non-financial risks across the entity's units of account. The sum of the RA calculated at the unit of account level would be the entity's aggregate RA.

## 3.2 Diversification, allocation, and aggregation

The entity's perspective on diversification affects both the amount of the RA and the assessment of the confidence level of the RA. Diversification may arise from the different types of insurance risk (e.g., reserve, underwriting, and catastrophe), among portfolios, and among related entities. The mechanics of how the actuary reflects diversification benefits may differ depending on whether the actuary uses an entity level or unit of account approach.

The entity may consider the potential diversification among types of insurance risks when calculating the RA for the liability for incurred claims (LIC) even if an explicit RA is not calculated for the liability for remaining coverage (LRC) for contracts for which PAA is applied. In determining the RA, the actuary would consider the non-financial risks associated with future service (i.e., LRC) and past service (i.e., LIC).

### 3.2.1 Diversification and allocation in an aggregate approach

To the extent that an entity level perspective is taken as the primary approach, the aggregate risk distribution would reflect the entity's perspective of the benefits of diversification among its component risks. For example, the entity may assess the degree of diversification that it expects arising from underwriting risk, reserve risk, catastrophe risk, and between portfolios or groups, to the extent facts and circumstances warrant or management so chooses.

Incorporating diversification can be based upon statistical or empirical analyses, expert judgment, or causal relationship. The more uncertain the diversification benefit, the less likely such benefit would be fully reflected in the aggregate risk distribution. Two common methods used by actuaries to quantify the effect of diversification are correlation matrices and copulas.

The Insurance Bureau of Canada's *Handbook for Economic Capital Modelling* states the following about correlation matrices:

> Correlations are often used in explicitly modelling dependencies. Correlation is the degree to which statistical distributions (and thus risks) are [linearly] related to each other. Correlation must take a value between -1 (perfect negative correlation) and +1 (perfect positive correlation). A correlation matrix is simply a matrix in which the correlations between pairs of data are specified. Correlation matrices must be symmetric, which means that the correlation between risks A and B is the same as the correlation between risks B and A in the correlation matrix. Correlation matrices must also be positive semi-definite (PSD). For example, if a correlation of +1 is chosen between risks A and B and risks A and C, a correlation of -1 between [B and C] is not logical; this results in a non-PSD matrix.[5]

If using correlation matrices, the actuary would consider the confidence level of the RA to ensure that the correlation factors still apply at the selected confidence level. Furthermore, the correlation factors would be considered in the context of the entity's own circumstances; the use of a "one size fits all" correlation matrix may not be appropriate.

The IAA *Risk Adjustment* monograph discusses copulas as follows:

[5] The Insurance Bureau of Canada, Handbook for Economic Capital Modelling (2018), 153

> The joint distribution of a set of random variables contains all the information about their individual (marginal) distributions and dependence structure. Dependence is a property of their copula. Copulas allow one to deal with the dependence among random variables separately from their marginal distributions. The estimation of the multivariate distribution is decoupled into estimation of the marginal distributions, which is more robust, and the estimation of the dependence relationship, which may have scarce data on which to rely. This decoupling is achieved with a copula function.[6]

For further information, see the IAA *Risk Adjustment* monograph.

The compensation the entity requires for non-financial risk would determine the confidence level at which the entity chooses to set its RA. The benefits of diversification reflected in an aggregate RA calculation are passed down to the unit of account via an allocation process.

The actuary may allocate the RA to the unit of account level directly (using a proportional or other method) or indirectly (by calibrating margins such that a unit of account calculation aggregated across all groups yields the same RA as the entity level calculation). In both direct and indirect allocations, the sum of the RA for all units of account would be equal to the aggregate entity level RA. Any allocation approach where the RA at the unit of account level meets the characteristics set out in IFRS 17.B91 could be reasonable.

If the overall RA is derived based on the cost of capital method or quantile method, the RA may be disaggregated by allocating based:

- the indicated RAs solely based on each amalgamated group[7];
- the marginal impact of removing each amalgamated group on the indicated overall RA;
- an average of the first two approaches; or
- an alternative approach.

Allocation to a given amalgamated group based on the marginal impact is given by the amount of capital required for the entity, less the capital required for the entity if that amalgamated group was excluded. However, if these amalgamated groups are not aligned with the RA granularity required under IFRS 17, further allocations may be required using different approaches. Examples of the proportionate allocation are presented in the illustrative examples in Appendix 3.

The margin method described in Section 6 could be an appropriate basis of indirect allocation. Within this method, both quantitative and qualitative insights could be used to ensure that the allocation reflects the risk characteristics of the units of account.

While the proportional method and the marginal method are common approaches to allocate the RA, variants of these approaches or other approaches can be considered. Literature about capital allocation offers useful descriptions of these concepts. Multiple practitioners have

[6] International Actuarial Association, Risk Adjustments for Insurance Contracts under IFRS 17 (2018), 89-90.

[7] Amalgamated group refers to the modelling classes within the cost of capital method and quantile method, these could be at the portfolio, group of contracts, line of business or other granularity.

independently developed and adapted variants of the marginal approach applied to simulation-based models, for example the Myers-Read[8], Ruhm-Mango-Kreps[9] or Euler approaches[10].

IFRS 17 prescribes neither the aggregation nor allocation methods. While this draft educational note includes descriptions and examples of some approaches and methods, it is beyond the scope of this draft educational note to provide an exhaustive list. The CIA published a research paper on *Risk Aggregation and Diversification* in April 2016; and more generally, the enterprise risk management section of the CIA website contains additional resources on aggregation and diversification.

### 3.2.2 Diversification and aggregation in a unit of account approach

When the RA is developed at the unit of account level, the entity's aggregate RA is equal to the sum of the RA for all units of account. The RA developed independently for one particular unit of account may or may not reflect the benefits of diversification with other units of account of the entity.

To the extent that diversification between different portfolios within an entity and/or diversification between related entities are considered in pricing, there would be clear support that reflecting similar diversification in the RA directly reflects the compensation the entity requires. If pricing does not account for diversification between portfolios and/or entities, then justification for including such diversification in the RA could prove more difficult and would depend on the particular facts and circumstances of the entity. Ultimately, the level of the RA for any given group is a matter of judgment, and the actuary would ensure that the resulting aggregate RA reflects the compensation the entity requires for uncertainty related to non-financial risk.

To the extent that the benefits of diversification are fully reflected in the assumed underlying probability distribution but are not fully reflected in the calculation of the entity's RA, the resulting confidence level of the RA would be higher than had the full benefits of diversification been passed down to the unit of account level. Expressed another way, the more conservative the view an entity takes in applying diversification at the unit of account level, the higher will be the resulting RA and its reported confidence level.

### 3.2.3 Diversification between entities

Question 4.10 in the Draft Ed Note IFRS 17 Application presents two different perspectives on diversification when a parent entity is composed of subsidiary entities.

One perspective is that each subsidiary entity would assess the compensation it requires for its own non-financial risks independent of any potential diversification with risks across the collective entities. The assumed probability distribution underlying the calculation of the confidence level of the subsidiary entity's RA would not reflect between-entity diversification.

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[8] Ruhm D.L., Mango D.F., A Method of Implementing Myers-Read Capital Allocation in Simulation, CAS E-Forum 2003, pp 451-457 (accessed May 4, 2021).

[9] D'Arcy S., Capital Allocation in the Property-Liability Insurance Industry, *Variance*, vol. 5, issue 2, 2011, pp 141-157, (accessed May 4, 2021).

[10] Tasche D., Euler Allocation: Theory and Practice, CERN 2007 (accessed May 4, 2021).

The parent entity would either: (1) apply a diversification benefit at the parent entity level such that the RA of the parent would be less than the sum of the RA of the subsidiaries or (2) simply sum the RA of the subsidiary entities. The confidence level of the parent entity RA would be higher in the second approach than the first.

Another perspective is that the diversification benefits of the parent entity would be reflected at the subsidiary entity level. Thus, the assumed probability distribution underlying the calculation of the confidence level of the subsidiary entity's RA would reflect between-entity diversification, and the degree of diversification credit reflected in the subsidiary's RA calculation would affect the confidence level of the subsidiary's RA. The parent entity RA would be the sum of the subsidiary entity RA.

With either perspective, the method used would be consistent from period to period and reflect how the level of risk is considered and managed by the entity.

The Transition Resource Group for IFRS 17 (TRG) has discussed the topic of diversification between entities in their May 2018 meeting; while TRG discussions are not official guidance they do provide practical information and background on issues. The TRG meeting notes are available as an IFRS publication in "*Summary of the Transition Resource Group for IFRS 17 Insurance Contracts meeting held on 2 May 2018*."

### 3.3 Reinsurance held

Under IFRS 17, the RA on reinsurance held is normally reported as a positive asset. In effect, the reinsurance RA represents the risk ceded to the reinsurer. Reinsurance non-performance risk is reflected through a reduction in the present value of future cash flows, not through the RA, however non-performance risk may have an "indirect" impact on the RA due to a reduction of future cash flows on which the RA is based. Additional guidance on non-performance risk can be found in Section 6.4 of the draft educational note on *IFRS 17 Actuarial Considerations Related to Liability for Remaining Coverage in P&C Insurance Contracts*[11].

Under IFRS 17, insurance contract liabilities (including liabilities on reinsurance contracts issued) are reported separately from liabilities on reinsurance contracts held. Similarly, where explicit disclosure of the RA is required, the RA is reported separately for insurance contracts issued and reinsurance contracts held. In this draft educational note, "gross RA" refers to the RA included in insurance contract liabilities (including reinsurance contracts issued) and "ceded RA" refers to the RA included in assets for reinsurance contracts held. This concept is articulated in IFRS 17.64, which specifically requires an explicit RA for ceded reinsurance contracts:

> Instead of applying paragraph 37, an entity shall determine the risk adjustment for non-financial risk so that it represents the amount of risk being transferred by the holder of the group of reinsurance contracts to the issuer of those contracts.

This separation of gross and ceded RA may not always be intuitive. This issue is addressed in question 9.9 of the Draft Ed Note *IFRS 17 Application*:

[11] Canadian Institute of Actuaries Draft Educational Note: IFRS 17 - Actuarial Considerations Related to Liability for Remaining Coverage in P&C Insurance Contracts (2021).

> A specific definition for the determination of the risk adjustment for reinsurance contracts held is provided that replaces the general definition in paragraph 37 used for insurance and reinsurance contracts issued in the standard. Under the definition for reinsurance held, the quantum of the risk adjustment for non-financial risk represents the amount of risk being transferred by the holder of a group of reinsurance contracts to the issuer of those contracts (paragraph 64).
>
> The risk adjustment for the reinsurance held can therefore conceptually be thought of as the difference in the risk position of the entity with (i.e., net position) and without (i.e., gross position) the reinsurance held. As a result, the appropriate risk adjustment for the reinsurance held could be determined based on the difference between these amounts.
>
> For reinsurance held, because the risk adjustment for reinsurance held is defined based on the amount of risk transferred to the reinsurer, the risk adjustment for reinsurance held will normally create an asset. On this basis, where a reinsurance contract held is reported as an asset the risk adjustment will have the effect of increasing the value of the asset, and will decrease the liability value where the reinsurance contract held is reported as a liability.

The RA reflects the compensation the entity requires for uncertainty related to non-financial risk and would be determined for gross insurance contract liabilities and ceded insurance contract assets. Ultimately, the key concepts underlying the RA are:

- The gross RA (i.e., pertaining to insurance contracts including reinsurance contracts issued) represents the compensation for non-financial risk that the entity requires for issuing those contracts, and
- The ceded RA (i.e., pertaining to reinsurance contracts held) represents the non-financial risk transferred from the entity to the reinsurer(s).

Any method that respects these concepts would generally be acceptable. However, in very unusual circumstances, the indicated ceded RA could be lower than nil. Even in such circumstances, it is important that the selected RA on reinsurance held reflects the transfer of risk to the reinsurer(s); the entity would not transfer negative risk and the ceded RA would not be negative. For more detail on reinsurance held methods, refer to Section 7.

Reinsurance is a hedge against the risk in the insurance contract. Theoretically, where the price of reinsurance is proportional to the level of risk being hedged (i.e., ceded) from the entity's perspective and where the majority of portfolios and years of claims reserves are subject to the same ceded percentages, then the ceded RA may be proportional to the gross RA (depending on the potential effect of diversification). The gross RA would be unaffected by the presence of reinsurance unless the reinsurance hedge affects the level of compensation required on the insurance contract; for example, some insurance contracts may not be issued if reinsurance cannot be secured on them.

An entity's reinsurance portfolio may contain a mix of proportional contacts (at potentially different ceding percentages by portfolio and/or by year) as well as excess of loss or other

forms of reinsurance contracts. From the entity's perspective, when the price of reinsurance is not proportional to the level of risk being hedged, the ceded RA may not be proportional to the gross RA. The cost of the reinsurance may be viewed as evidence of the price the entity is willing to pay to be relieved of risk and therefore indicative of the entity's compensation requirements related to the uncertainty of the risk being ceded.

### 3.4 Discount rate

IFRS 17 provides no direction regarding the discounting of the RA. IFRS 17.B90 states: "[t]he risk adjustment for non-financial risk is conceptually separate from the estimates of future cash flows and the discount rates that adjust those cash flows." Furthermore, IFRS 17.B92 states: "[a]n entity shall apply judgement when determining an appropriate estimation technique for the risk adjustment for non-financial risk."

Consequently, the use (or absence) of discounting and the method of determining discount rates, if applicable, are at the discretion of the entity. More than one discounting method is possible. Regardless of the discounting method chosen, the actuary would maintain a consistent method between reporting periods.

Changes in discount rates will affect the current value of the RA if the derivation of RA requires the use of discounting. Under IFRS17.81, the entity is not required to bifurcate the change in RA into its component pieces (i.e., change in undiscounted provision for non-financial risk vs. change in effect of discounting). If not bifurcated, the entire change in RA is presented as part of the insurance service result, and the entire change in RA related to future services adjusts the CSM or loss component.

### 3.5 Time horizon

The appropriate time horizon for calculating IFRS 17 RA is the lifetime of the uncertainty in the insurance contract cash flows.

Actuaries using an internal model[12] for determining the RA would be aware that there may be no link between the confidence level corresponding to the RA and the confidence level underlying the internal model. For example, the result of an internal model calibrated to cover risks at a confidence level of value at risk (VaR) 99.5 percentile over a one-year horizon is conceptually very different than an RA calculation calibrated to a lifetime horizon. The RA would generally be calculated at a lower percentile over a longer time horizon than the economical capital resulting from the internal model, and thus the two amounts would not likely be comparable. For an actuary to use an internal model for determining the RA, the internal model would need to be re-calibrated to reflect any differences in time horizon and confidence level.

[12] The term "internal model" is often used interchangeably with "economic capital model." The International Association of Insurance Supervisors states: The term "internal model" refers to "a risk measurement system developed by an insurer to analyse its overall risk position, to quantify risks and to determine the economic capital required to meet those risks." Internal models may also include partial models which capture a subset of the risks borne by the insurer using an internally developed measurement system which is used in determining the insurer's economic capital.

When using a cost of capital method, the capital amounts supporting the non-financial risk and held over the lifetime of the insurance contract cash flows would be estimated. Conceptually, insurance contract lifetime cash flows that were selected for such modelling may correspond to a certain confidence level. Alternatively, the amount of capital held in each period may be based on a certain confidence level of the distribution of the present value of the remaining contract cash flows. The RA would reflect the capital amount held and the return required on the capital.

### 3.6 Disclosure requirements

#### 3.6.1 Disclosure of reconciliations

General IFRS 17 disclosure requirements are outlined in IFRS 17.93 through IFRS 17.132. Elements specific to the RA include the requirement to disclose a reconciliation of the movement in the RA from the opening balance to the closing balance (IFRS 17.100 for PAA and IFRS 17.101 for general measurement approach (GMA))[13] and the requirement to disclose significant judgements and changes in judgments used in the calculation of the RA (IFRS 17.117). Disclosures required by the Office of the Superintendent of Financial Institutions (OSFI) and the Autorité des marchés financiers (AMF) are expected to be more granular than those required by IFRS 17. For example, experience by coverage for automobile insurance policies is expected to be required.

#### 3.6.2 Disclosure of the confidence level

Disclosure requirements for the confidence level are noted in IFRS 17.119:

> An entity shall disclose the confidence level used to determine the risk adjustment for non-financial risk. If the entity uses a technique other than the confidence level technique for determining the risk adjustment for non-financial risk, it shall disclose the technique used and the confidence level corresponding to the results of that technique.

It is reasonable to infer that IFRS17.119 refers to the entity's aggregate RA, and it would be at the discretion of the entity to disclose the confidence level of RA at lower granularity levels (e.g., portfolio or group) than the overall entity level.

With respect to the determination of the confidence level, question 4.18 in the Draft Ed Note IFRS 17 Application states:

> In order to determine confidence levels, it is necessary to be able to locate the value of the Fulfilment Cash Flow of a collection of insurance contracts on the probability distribution of the present value of the cash flows for the contracts. If that probability distribution is not explicitly derived as part of the valuation process, some method or model might be needed to estimate the percentiles of that combined portfolio distribution at the amount that reflects the risk

[13] Disclosures required by OSFI and AMF are expected to be more granular than those required by IFRS 17. For example, experience by coverage for automobile insurance policies is expected to be required by OSFI and AMF.

adjustment. The extent of the analysis needed for such estimation is likely to require judgement.

Potential methods for the determination of the confidence level range from full stochastic modelling to a relatively simple assumption about the shape of the underlying probability distribution.

Determining the confidence level corresponding to the RA may be operationally burdensome; nevertheless, the confidence level is a required disclosure under IFRS 17. Therefore, the actuary would need to assess the practicality, cost, and effort associated with the selected method. In particular, it is possible that parameterization of a full stochastic model may require so many assumptions that the accuracy of the resulting confidence level becomes spurious. In many situations, a more simplified approximation method may provide an equally reasonable estimate of the confidence level at much less cost and effort. The degree of rigour is an entity-specific decision.

Regardless of the method selected, the actuary would be aware that the quantification of the confidence level is an estimate, given the unobservable nature of the full probability distribution of the present value of the cash flows. The actuary would make users of the information aware that the quantification is based on certain methods and assumptions and take care to apply those methods and assumptions consistently from period to period.

Disclosure requirements specific to PAA are described in Section 3.7.

### 3.7 Risk Adjustment under premium allocation approach

An estimate of the LRC calculated under the general measurement approach (GMA) includes an RA, whereas an estimate of the LRC calculated under PAA does not, unless the group is onerous. Regardless of whether the LRC is calculated under PAA or GMA, the LIC requires an explicit RA. The fact that the treatment of the RA differs for the LRC and the LIC may complicate the calculation and/or disclosure of the confidence level required by IFRS 17.119.

For an entity using PAA, an explicit RA calculation for the LRC is not required for financial reporting purposes for groups that are not deemed onerous. Under the PAA, contracts are assumed to be non-onerous unless facts and circumstances indicate otherwise; these facts and circumstances may include an estimate of the RA, however it is not explicitly required by the standard. If facts and circumstances indicate that the group is onerous, then the entity is required to calculate the fulfilment cash flows that relate to the LRC, which includes calculating the RA to determine the loss component. If the calculations confirm that the insurance contracts are onerous, the entity is required to separately disclose the LRC excluding any loss component and the loss component; disclosure of an explicit RA amount, however, is not required. If the calculations confirm that the contracts are not onerous, the only disclosure required is the LRC excluding loss component under PAA.

The LIC comprises the fulfillment cash flows related to past service[14]; the estimates of future cash flows are adjusted to reflect the time value of money (and the financial risks related to those cash flows) and the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk. As a result, for the determination of LIC with non-zero future cash flows, a calculation of the RA is always required. Disclosure requirements for the LIC specify a split between the RA and the LIC excluding the RA at the entity level. The RA may need to be available at a lower level of aggregation than the entity level. Entities will have to consider the level of disaggregation that is appropriate to achieve the general disclosure objective in IFRS 17.93.

For entities where the primary (or only) measurement approach for the LRC will be PAA, the actuary may seek a method to estimate the RA for testing onerous contracts that maximizes operational efficiency. The actuary may consider the volatility associated with the LRC, but in situations where the RA is mainly driven by volatility in the cash flows associated with claims activity and where the cash flows associated with premium activity for the LRC are not subject to volatility, the RA required for the LRC of onerous groups may be approximated by making use of the RA derived for the LIC.

The requirement to reflect diversification applies regardless of the entity's selected measurement approach (i.e., GMA vs. PAA). Thus, the considerations described in Section 3.2 apply for entities adopting PAA. Regardless, the calculations may be more challenging as the RA may not be explicitly calculated for the LRC.

# 4. Quantile methods

As noted previously, this draft educational note does not contain an exhaustive list of methods nor does it contain detailed statistical background and descriptions. The actuary is referred to the IAA *Risk Adjustment* monograph, which was developed explicitly for purposes of IFRS 17.

## 4.1 Introduction

Quantile methods, including VaR and CTE, use distributions of the fulfilment cash flows to determine the RA for a given probability. One key advantage of a quantile method performed at an aggregate level is that it directly satisfies the IFRS 17 disclosure requirements regarding confidence level corresponding to the RA. The IAA *Risk Adjustment* monograph states: "A key advantage of the quantile techniques is that the mathematics enable risks to be represented graphically which creates ease and convenience in understanding the result. A disadvantage is that if misrepresented, it may introduce spurious accuracy."

Assessment of the confidence level corresponding to the RA would generally require underlying assumptions of the risk distribution. Given a risk distribution, both VaR and CTE can be calculated. It is important for the actuary to recognize that a VaR calculation may not capture the risk for a particularly skewed distribution of cash flows, which are common for certain P&C

[14] While the LIC is often described as always being measured under the GMA, for groups of contracts where the LRC is measured under PAA, there are some differences in the measurement and disclosure requirements for LIC as well. See IFRS 17.59(b) and IFRS 17.97-109 for further details.

risks, and thus may not be an appropriate method to use. For further discussion of the use of VaR and CTE for RA, the actuary is referred to the IAA *Risk Adjustment* monograph.

This section provides a high-level overview of possible methods to generate a risk distribution and describes how quantile methods (including VaR and CTE) are applied to determine the RA. Detailed theoretical background information and implementation guidance for quantile methods are beyond the scope of this draft educational note.

### 4.2 Generating a distribution

To generate a distribution of the underlying future cash flows, different methods may be considered:

- Apply a suitably skewed probability distribution (e.g., lognormal or gamma distribution) to projected future cash flows;
- Monte Carlo simulation;
- Bootstrapping; and
- Scenario modelling.

Each of these are described briefly below. The actuary would consider how well the selected method measures the non-financial risk associated with timing and amount of future cash flows, and may consider making adjustments if these are not fully reflected. In modelling insurance risk stochastically, the actuary may consider parameter risk, process risk, and model risk. For further information, the actuary is referred to the IAA *Risk Adjustment* monograph.

#### 4.2.1 Probability distribution for present value of cash flows

Under IFRS 17, the actuary would estimate an unknown variable (i.e., fulfilment cash flows), which conceptually is derived from an analysis of the full range of possible outcomes of the contractual cash flows. In practice, however, it may be extremely difficult to observe the full range of possible outcomes or the underlying probability distribution that defines the full range of possible outcomes. The actuary may therefore assume the shape of the underlying probability distribution. For example, the actuary may assume a lognormal or gamma distribution, both of which exhibit skewness. There are many other distributions that may appropriately represent the characteristics of an entity's cash flows; however, it is beyond the scope of this draft educational note to provide an exhaustive list.

#### 4.2.2 Monte Carlo simulation

Non-financial risks can be modelled stochastically. The Monte Carlo method may be used to repeatedly simulate a random process for relevant risk variables (such as reserving, underwriting, and catastrophe risk) covering a wide range of possible situations. In general, thousands of simulations are typically generated under the Monte Carlo method to reduce sampling variability. The actuary is able to derive a probability distribution based on the resulting simulations of the entity's aggregate risks. This enables the RA to be set at the target percentile level of the observed distribution.

### 4.2.3 Bootstrapping

The IAA *Risk Adjustment* monograph describes bootstrapping as follows:

> This is a resampling technique where historical observations are used to create stochastic scenarios. Rather than a hypothetical distribution, this technique relies on historical information as potential future observations. As an example, to estimate the variability of the sample mean in the original data set, sampling with replacement to generate multiple future populations may create an appropriate distribution of sample means. For non-life insurance reserves, this approach has also been used to generate the probabilities of uncertain outcomes. However, in many applications some sort of normalization would be appropriate to remove such factors as seasonality, or adjust for exposure. This technique has merit because it may more closely resemble what historical data has shown can happen. This method also does not restrict the recognition of heavy tails or other observations that depart from theoretical distributions. However, it may be a poor approximation for small samples and it relies heavily on the fact that each sampled variable is independent from another. Another disadvantage is that the variability of outcomes for future cash flows may not be adequately represented by historical observations in a particular data set, particularly for low frequency, high severity outcomes or other unusual events.[15]

### 4.2.4 Scenario modelling

Scenario modelling is mentioned as an alternative method in Question 4.14 of the draft Ed Note *IFRS 17 Application* for reflecting qualitative risk characteristics "provided suitable extreme scenarios are included." Instead of different assumptions applied to each risk, a combination of assumptions or a scenario reflecting multiple non-financial risks may be applied to the underlying insurance contracts. In practice, however, the actuary may have difficulty calibrating appropriate scenarios for purpose of the RA.

Financial condition testing (FCT)[16] is one example of scenario modelling. FCT is a process of analyzing and projecting trends in an insurer's capital position given its current circumstances, considering adverse scenarios that are severe but plausible. The materiality threshold for an FCT analysis is generally higher than the materiality associated with a liability calculation for financial reporting purposes. Therefore, the actuary would be cautious in applying the methods used to complete an FCT analysis for the determination of an RA.

## 4.3 Measuring risk

Once a distribution is generated, both VaR and CTE can be calculated or observed.

### 4.3.1 VaR

The VaR method can be summarized in the following three steps:

[15] International Actuarial Association, Risk Adjustment for Insurance Contracts under IFRS 17 (2018), 74.
[16] Effective January 1, 2020, FCT replaced dynamic capital adequacy testing (DCAT). See Section 2500 of the *Standards of Practice* for further information.

1. Entity determines the target confidence level at which it determines its compensation required (e.g., xth percentile).
2. VaR is determined such that the probability of the present value of actual cash flows being less than VaR is x%.
3. RA is then determined as VaR at xth percentile less the mean of present value of probability-weighted cash flows.

The VaR method is similar to the method frequently used for economic capital calculations (such as own risk and solvency assessment, ORSA). An entity's existing VaR methods may be applied to the calculation of RA. There are, however, important differences including:

- Risk profile – Economic capital typically includes all risks faced by the entity, whereas the RA only reflects non-financial risk.
- Time horizon – Economic capital tends to be calculated over a one-year time horizon, whereas the time horizon for the calculation of the confidence level of the RA would reflect all cash flows within the contract boundaries (i.e., the lifetime horizon, where lifetime is limited by the contract boundary). The entity may, if it so chooses based on its own compensation requirements, determine the level of the RA based on one-year shocks, but the associated confidence level would be calibrated against a lifetime horizon.
- Comparability – Economic capital is often calculated at a higher percentile (e.g., 99.5%) over a one-year time horizon. The confidence level of the RA would generally reflect a lower percentile over a longer time horizon. As such, the two amounts are generally not directly comparable.

#### 4.3.2 CTE

The CTE method can be summarized in the following three steps:

1. Entity determines the target confidence level at which it determines its compensation required (e.g., xth percentile).
2. From the probability distribution, an entity can determine:
    A. conditional mean of the present value of future cash flows given that the present value exceeds the target percentile; and
    B. mean of the present value of probability-weighted cash flows.
3. RA is then determined as the difference between A and B.

Question 4.14 of the draft Ed Note *IFRS 17 Application* does not explicitly mention a CTE technique. However, it mentions that "… it may be possible to incorporate allowance for correlation and skewness effects." To address skewness, a suitably skewed probability distribution and/or CTE technique may be applied.

### 4.4 Aggregation and allocation

Once the aggregate percentile level and resulting aggregate RA are derived from a quantile method, the actuary would allocate the RA to the groups per the requirements of IFRS 17.24 and perhaps to more granular levels for the purpose of determining initial groups per IFRS 17.16 and IFRS 17.47. As noted previously, IFRS 17 does not prescribe the allocation method. Possible solutions range from simple proportional allocation to more sophisticated weightings based upon analyses of the component risks.

Alternatively, instead of producing a distribution of the future cash flows for the entire entity, the VaR or CTE may be calculated for each non-financial risk and then aggregated using a correlation matrix. See further details about allocation in Section 9.

## 5. Cost of capital method

### 5.1 Introduction

In a cost of capital method, the RA is based on the compensation that the entity requires to meet a target return on capital. In this calculation, three elements are required:

1. projected capital amounts, which are used to determine the level of non-financial risk[17] during the duration of the contract;
2. cost of capital rate(s), which represent the relative compensation required by the entity for holding this capital; and
3. discount rates, which are used to obtain the present value of future compensation required. The actuary may use similar discount rates for the RA calculation as are used for other IFRS 17 calculations (such as discounting the LIC).

This method has the benefit of being conceptually close to the definition of the RA and potentially allows allocation of the RA at a more granular level assuming a more granular allocation method for capital amounts. On the other hand, the cost of capital (CoC) method may be operationally complex, as the projection of capital requirements and its underwriting projection are an input to the RA calculation.

Whereas the general formula for the CoC is simple, there are a variety of ways to determine its components. A practical method to determine the compensation required by the entity is the method used for pricing purposes (i.e., the way an entity determines compensation in its day-to-day operations). Alternatively, an entity may prefer to define the compensation required on a more theoretical basis. Both methods are discussed in this section.

In addition to the CoC calculations described below, there are simplified ways in which the CoC concept could be applied to estimate the RA. One such example is presented in Appendix 2.

[17] In theory, the capital would cover the various risks that an insurance entity faces such as, but not limited to reserve risk and underwriting risk, market risk and general operational risk. The capital amount subject to the CoC method for RA determination would stem from non-financial risks and usually correspond to the capital assigned to reserve risk and underwriting risk.

### 5.2 General formula

The general formula for the RA based on a cost of capital method is:

$$RA = \sum_t \frac{r_t \ x \ C_t}{(1+d_t)\hat{}t}$$

where,

- $C_t$ is the average capital amount for the period t;
- $r_t$ is the selected cost of capital rate for the period t;
- $r_t$ x $C_t$ is the compensation amount required by the entity for the period t; and
- $d_t$ is the selected discount rate(s) for the period, reflecting a yield curve, if appropriate.

Considerations for defining $C_t$ and $r_t$ are discussed in the following sections.

### 5.3 Capital ($C_t$)

As noted, a practical approach for a given group of insurance contracts is to determine the capital requirement with the capital model used for pricing purposes. Other capital models, such as the regulatory capital model (e.g., minimum capital test (MCT)) of the entity or an internal model, may be used as long as such model is consistent with the view of the entity regarding compensation. In selecting a capital model, the actuary would consider the entity's risk appetite with respect to capital, which may be expressed as an internal or operating target.

The actuary would use a regulatory capital model or internal model with caution as these models may not be appropriate to calculate the entity's capital requirement for RA purposes. (See Sections 3.5 and 4.3.1 for further details.)

Furthermore, the capital requirement would be adjusted to reflect the following considerations:

- Removal of the capital component(s) related to risks other than the non-financial risks in scope of the RA (such as market risk or general operational risk);
- Diversification if not specifically addressed in the capital model being used; and
- Consideration of risk-sharing mechanisms (e.g., reinsurance and Facility Association) reflected in the estimates of future cash flows.

The actuary would derive a method to allocate the capital requirement (initially determined by considering the diversification at an aggregate level) to the most granular level. At a minimum, the actuary would allocate the capital requirement by group to meet IFRS 17 requirements. Literature includes other capital allocation methods, such as the pro rata, continuous/discrete marginal, and the Shapley method, none of which are described in this draft educational note.

### 5.4 Cost of capital rate ($r_t$)

The cost of capital rate is traditionally designed as the weighted average cost of capital for an entity that considers all sources of capital minus the rate that could be earned on surplus. Among the sources of capital, the cost of capital for common shareholders (or equivalent stakeholders) is the most complex to define.

A practical approach is to use target rates of return on capital by capital source and their respective weights that are consistent with management's view (i.e., used for pricing or as corporate targets). Target rates of return on capital may vary by portfolio, product, etc. Even if these rates of return are not supported by cost of capital theory, they may still represent the compensation required by the entity.

Alternatively, indications of cost of capital rates may be determined by the entity based on the following considerations:

- The cost of capital would depend on the entity's risk aversion.
- The amount of capital would reflect the level of risk (i.e., uncertainty). If the entity requires different compensation for similar risks in different portfolios, the difference would be reflected in the cost of capital rate rather than the amount of capital.
- The cost of capital rate may be defined as a rate that represents the profit required for a given quantity of risk (risk perceived by the shareholders). Then, this rate is applied to an amount of capital measured by a capital model. In theory, when the capital model used measures perfectly the risks perceived by the shareholders, it would be reasonable and practical to apply the same cost of capital rate to all lines of business, products and risks, etc. In practice, however, capital amounts measured by models are generally simplified measures of the underlying risks and it may be appropriate to adjust the cost of capital to compensate for this.
- The risk-adjustment is a pre-tax item yet cost of capital requirements are often-stated on an after-tax basis. The actuary would ensure that the calculations are internally consistent.

## 6. Margin method

Under a unit of account approach with a margin method, the actuary would select margins that reflect the compensation the entity requires for uncertainty related to non-financial risk. The "compensation the entity requires" would be quantified through the margin-setting process, which is not necessarily based on a specified confidence level.

For IFRS 17 disclosure purposes, the actuary would calculate the confidence level corresponding to the resulting RA (i.e., sum of the indicated RA resulting from the selected margins). The confidence level disclosure would be an output (not an input) of the process. To meet actuarial standards of practice for examining the reasonableness of a calculation's result, the actuary may choose to use a quantile method to compare with the RA resulting from the margins, taking into consideration the sufficiency and reliability of the data input and paying particular attention to items such as the trend, mean, median, symmetry, skewness, and tails of underlying distributions.

## 7. Reinsurance held methods

The following sections regroup considerations specific to reinsurance held for each of the methods detailed in Sections 4 and 5.

Gross and ceded RA referred to in this section are defined in Section 3.3, with net RA being the net result of the two adjustments. These amounts can be determined in several ways, and it is the entity's choice to model any two of these quantities and to assess the third by addition or difference. The intent of this note is to outline the options available to the entity, not to prescribe a specific approach.

### 7.1. Quantile methods

If generating a distribution of the underlying future cash flows to assess the ceded RA, the actuary could choose between modeling directly from ceded data or calculating the RA as the difference between gross and net estimates at selected confidence levels. This choice could consider the credibility of the ceded data.

Using the difference between gross and net estimates has the operational advantage of using distributions that are generally readily available, or which can be produced using basic claims data. The actuary could decide to select different confidence levels for gross and net bases, which may reflect the different shapes of the distributions underlying the gross and net cash flows. The actuary may need to consider the entity's risk appetite framework when performing this assessment.

When using the difference between gross and net estimates for non-proportional coverages, situations may arise where the difference may not realistically represent the transferred non-financial risk. This could occur for coverages triggered by extreme events far in the tail, for which using VaR measure could result in a zero ceded RA for the selected gross and net percentile. The actuary is referred to the *IAA Risk Adjustment* monograph, Chapter 6, for a description of other acceptable approaches in such a case.

Regardless of the selected approach, the actuary would be mindful of the components not directly related to claims that might be included in the ceded or net data used, such as reduction in recoverables due to netting of reinstatement premiums. If the actuary decides to model RA at different confidence levels by specific types of treaties, the effect of any inuring reinsurance would also be considered.

### 7.2. Catastrophe models

Outputs from an external CAT model could provide useful information for the assessment of the ceded RA. If the output provided by the model is tailored to the entity’s book of business, the actuary could select a percentile directly from the given distribution if appropriate. The actuary could also leverage distributions provided by the reinsurer containing data other than that of the entity by scaling it to the entity’s loss profile. In doing so, the actuary could ensure the data is representative of the risk transfer.

### 7.3. Proportional scaling

In assessing the ceded RA for proportional coverages, the actuary could leverage the RA modeled for its direct business by scaling to the proportionally ceded portion, effectively resulting in the application to the (present value of) future cash-flows of the same RA percentage on both direct and ceded business.

A proportional scaling approach could be taken for non-proportional coverages if enough evidence demonstrates that the ceded RA can consistently be expressed as a portion of the gross RA for these coverages, assuming the uncertainty of the amounts and the timing of their respective cash flows in gross and ceded amounts is similar.

When using this approach, the actuary could consider the effect of other provisions of the reinsurance contract when assessing the impact on non-financial risk arising from the reinsurance held agreement, such as ceding commissions, expense allowances and reinstatement premiums.

For non-proportional coverages, the RA ceded could also consider the effect of the retention and limit of such coverages. For instance, once the entity has reached its retention, the RA associated with the portion of ceded claims in excess of the retention could be equal to that of the gross business (retention plus ceded layer), so that the ceding entity retains a null net risk. This could likely be directly reflected when using a quantile method but could need to be accounted for if using proportional scaling. Additionally, if the entity's gross selected RA percentile results in fulfilment cash flows in excess of the limit of the reinsurance contract held, the excess portion should be considered in assessing the retained risk and associated RA. Regardless of the method used, considerations regarding the timing risk resulting from the lag in reimbursement by the reinsurer when the ceding entity pays first would have to be reflected, as it could result in a non-null risk even in the presence of a limit.

### 7.4. Cost of capital

Section 3.3 of this draft educational note discusses general considerations with respect to reinsurance held. A specific consideration in the cost of capital method is the need to develop cost of capital rates on a gross of reinsurance basis. For this purpose, it may be practical to use the cost of capital rate net of reinsurance. This is consistent with the considerations articulated in Section 3.3.

## 8. Catastrophe reinsurance

Uncertainty arising from catastrophes is usually associated with LRC, however it may impact the RA estimates under LIC if there is still uncertainty associated with catastrophe after the occurrence of the event. When determining the RA for insurance contract liabilities which have catastrophe reinsurance protection, the actuary may estimate the net RA separately from the ceded RA. The catastrophe reinsurance is usually purchased to provide protection against infrequent events. The expected ceded losses at a typical selected confidence level of the gross distribution may be zero. Hence, a quantile method may not generate a significant RA for a catastrophe treaty unless it is a working layer.

The coverage is usually purchased from entities with global diversification. The amount of additional capital required by a global entity, which is able to diversify exposures with multiple other regions, may be lower than the ceding company. Using the ceding entity's cost of capital and amount of capital required may result in a ceded RA that is greater than the expected profit priced into the catastrophe treaty, which could imply a reinsurance contract held with cash inflows expected to be greater than cash outflows.

Catastrophe reinsurance can be purchased for high percentile events (1 in 500 year return period earthquake protection for example). A cost of capital method using a required capital assumption selected at a lower percentile may fail to capture the compensation required for upper layers of the treaty. Where the catastrophe modelling is performed separately within the cost of capital method, assumptions may be selected to reflect these higher return periods.

One alternative may be to use a target profit margin method, similar to the one described in Appendix 2. Target profit margins may be estimated by comparing annual reinsurance premiums to modeled claims by layer, taking into consideration friction costs (ceding commissions) and administrative costs of reinsurers (and excluding the portion of the reinsurers' profit margin that may relate to other than non-financial risk). The average observed profit margins over an underwriting cycle may be used to set the estimated targets. Target profit margins may vary by expected return period, with higher margins for higher return periods. There will be times when the perception of risk transferred differs materially between the cedent and the assuming entity, which could result in an implied negative expectation of ceded profit from the ceding entities viewpoint. When the ceding entity's expectation of risk transferred would result in the implied expectation of a profit from the reinsurance contract held (present value of cash inflows greater than present value of cash outflows), and the underlying contract is not onerous, then the ceding entity may adjust their estimated reinsurance cash flows to eliminate this expectation.

## 9. Combining approaches and methods

The combination of multiple approaches and methods may take many forms. Question 4.23 in the Application of IFRS 17 Insurance Contract states:

> There is no requirement to use a single model or approach for all the business or all the risks. An entity may use a mix or blend of methods to set risk adjustments across different businesses provided such an approach makes appropriate allowance for diversification and is done in a way that can be reasonably disclosed and explained to external auditors and is relevant to users (which is likely the biggest hurdle to a mixed model approach).

One possible way to combine methods under a unit of account approach is to use VaR for groups with less skewed distribution and the cost of capital method or margins for groups with highly skewed distributions, where the VaR does not provide a reasonable estimate of the RA. In this example, the actuary would still need to determine the overall confidence level for disclosure purposes. Moreover, the actuary would ensure that the aggregate RA from these different methods achieves the entity's compensation requirement for the uncertainty related to non-financial risk.

### 9.1. Aggregate/entity-level approach

Under an aggregate approach, the primary methods for calculating the aggregate RA are a quantile method and the cost of capital method. The margin method may be appropriate for an aggregate RA if a single margin can be selected to reflect the compensation the entity requires for bearing the risk associated with the underlying portfolios. In addition, margins may be used to allocate the aggregate RA to the unit of account level.

#### 9.1.1. Aggregate approach using a quantile method

The actuary may allocate the aggregate RA using margins that are calibrated to ensure that the sum of the RA calculated at the unit of account level is equal to the aggregate RA calculated via a quantile method. Other allocation methods are also possible. In choosing a reasonable approach, the actuary has discretion to consider operational efficiency.

If using margins to allocate the aggregate RA the actuary may periodically review and recalibrate the margins. The actuary may choose to limit change in the margins outside of the periodic review cycle (which may be annually) to only those circumstances where the resulting confidence level corresponding to the RA drifts away from the target confidence level by more than a pre-defined threshold.

#### 9.1.2. Aggregate approach using cost of capital method

Margins may be calibrated to replicate an aggregate RA derived from a cost of capital method. These margins could be a practical alternative to a principles-based cost of capital calculation, given that the latter may be very difficult to execute in production within typical financial reporting deadlines.

A cost of capital method may be a useful input into calibration of the level of the margins by portfolio. Margins may be developed to produce RA by portfolio that are proportional, or approximately proportional, to the capital requirements by portfolio. Actuarial judgment would dictate whether a goal of proportionality is appropriate given the facts and circumstances particular to the entity.

To comply with presentation and disclosure requirements, the confidence level corresponding to the resulting RA would be calculated.

### 9.2. Hybrid approach

There may be many different forms of hybrid approaches that incorporate the unit of account and aggregate perspectives with various methods (e.g., quantile, cost of capital, and margins).

One possible hybrid approach is described in this section.

First, assume that the entity's risk management policy specifies a target range for the confidence level corresponding to the aggregate RA. This target range would correspond to a range of the aggregate compensation the entity requires for the uncertainty related to non-financial risk.

Next, assume that the actuary calculates a total RA and its associated confidence level using margins established for each portfolio (or group) as a starting point, with adjustments for diversification.

To the extent that the sum of the RA produced by the selected margins do not result in an aggregate RA that is within the target range set out by policy, the margins would be re-calibrated to ensure that the entity level RA was within the range.

Given the uncertainties associated with estimating confidence levels and the dispersion in estimates of RA that may result from the use of different approaches and methods, this

particular example in which a range of target confidence level is established by the entity offers an important operational advantage. Calibrating the RA within a sufficiently wide target range may lessen some of the concerns with the precision (or lack thereof) for confidence level calculations.

The actuary could follow a hybrid approach where the margin method would be combined with either the cost of capital method or a quantile method. As such, the actuary may calculate the aggregate RA based on a range of target cost of capital rates, and the margins would be calibrated accordingly.

# 10. Quantification of the confidence level

## 10.1. Quantile method as primary method

Where a quantile method is the primary method for determining the amount of the RA, there is no need for a separate process to calculate the confidence level corresponding to the RA. Given the requirement of a probability distribution to calculate the quantile method RA, the resulting confidence level of the selected RA would be directly available. Thus, a quantile method that is used as the primary method for calculation of the RA directly satisfies the IFRS 17 disclosure requirements in IFRS 17.119.

## 10.2. Quantile method as secondary method

If the primary method for determination of the RA is the cost of capital, the margin method, or some other method, then the actuary would need a secondary method to quantify the confidence level corresponding to the RA to satisfy the disclosure requirement. As noted in question 4.18 of the Draft Ed Note IFRS 17 Application, this would usually require some information about the underlying probability distribution of the present value of future cash flows. The term “future cash flows” used throughout the remainder of this section is understood to be the present value of future cash flows.

As noted previously, the distribution of future cash flows for P&C insurance is typically skewed. In the following example, a lognormal distribution is assumed for illustration purposes only. Lognormal distributions are commonly used in P&C insurance to model claim size, as the distribution is positively skewed and the random variables take on only nonnegative values. The purpose of the example is to illustrate how a quantile method may be applied. In practice, the actuary would select the distribution(s) that most adequately fits the entity’s cash flows.

A lognormal distribution can be defined by its parameters ($\mu$, $\sigma$), where the parameters represent the mean and standard deviation of the normally distributed variable log X and not that of X. Any point on the distribution can be identified if these two parameters are known. For lognormal distributions, the mean and standard deviation can be used to derive parameters ($\mu$, $\sigma$).

Random variable X has a lognormal distribution with parameters ($\mu$,$\sigma$) if, and only if, log X is normally distributed with mean $\mu$ and variance $\sigma^2$. Therefore, the lognormal variable X can be expressed as $X = e^{\sigma Z+\mu}$, where Z is the standard normal random variable. The lognormal cumulative distribution function is

$$F_x(x) = \begin{cases} 0 & \text{if} -\infty < x \leq 0 \\ \Phi\left(\frac{\log x - \mu}{\sigma}\right) & \text{if } 0 < x < \infty \quad (-\infty < \mu < \infty, \sigma > 0) \end{cases}$$

The continuous lognormal variable X has probability density function

$$f_x(x) = \begin{cases} 0 & \text{if} -\infty < x \leq 0 \\ \frac{1}{\sigma\sqrt{2\pi}x} \exp\left(-\frac{1}{2}(\log x - \mu)^2/\sigma^2\right) & \text{if } 0 < x < \infty \end{cases}$$

The best estimate liability (BEL) represents the mean or central tendency of the distribution. Ideally, the actuary would have a method to derive the standard deviation of the assumed distribution of future cash flows, but in practice this may be difficult. The practical problem is that it will likely be impossible to independently observe the standard deviation of the distribution of future cash flows.

One potentially reasonable approach is that the standard deviation of the distribution for specific portfolios can be derived from the insurance risk factors in the MCT. (See Section 9.3.) Using the standard deviation from the MCT and the BEL as the mean parameters, (μ, σ) can be derived by using the formulas below.

The mean, variance, and skewness follow directly:

$$E[X] = e^{\mu+\sigma^2/2}$$

$$\mathrm{Var}[X] = \left(e^{\sigma^2} - 1\right)e^{2\mu+\sigma^2}$$

$$\mathrm{Sk}[X] = \left(e^{\sigma^2} + 2\right)\sqrt{e^{\sigma^2} - 1}$$

The actuary may also explore other approaches to define the standard deviation. For example, the actuary may be able to turn to the entity's internal model if such model is sufficiently robust and can be recalibrated to reflect the time horizon and risk appetite required by the RA.

### 10.3. Calibration using MCT

This section refers to OSFI's MCT and the Branch Adequacy of Assets Test (BAAT). The description is also applicable to the MCT of the AMF.

A practical advantage of using the MCT as a calibration point is operational efficiency to leverage existing processes in the quantification of the confidence level. A potential disadvantage is that the estimated confidence level may not be appropriate for a particular entity as MCT requirements are determined/calibrated at the entire Canadian insurance industry level.

The insurance risk factors in the MCT consider claim liabilities and premium liabilities and are based on a review conducted in 2013. In the event that OSFI updates the MCT risk factors, the considerations underlying the revised factors would potentially change the results.

Per OSFI,

> To develop the new factors, OSFI undertook a variability analysis based on incurred and paid data to assess the insurance premiums and claims risks. For unpaid claims, OSFI performed a variability analysis between the estimated and the actual amount of losses using two methods: lognormal and bootstrap. For premium liabilities, OSFI's variability analysis was built based on pure loss ratio data, assessing variability in ultimate loss ratios by line of business for each accident year. A correlation study between lines of business was also performed to determine the level of diversification credit.[18]

The following are links to OSFI's documentation of the variability analysis:

- "Discussion Paper on OSFI's Proposed Changes to the Regulatory Capital Framework for Federally Regulated Property and Casualty Insurers" (May 2013)
- "Disclosure on OSFI's Review of Insurance Risk Factors" (December 2013)
- "Presentation: The Next Generation of the Minimum Capital Test - A Canadian Regulatory Capital Framework" (June 2013)

The risk factors were established at a confidence level of VaR 99.5% with an explicit adjustment for diversification. The factors were reduced by approximately 45% for claims liabilities and 11% for premium liabilities to account for risk diversification. Per OSFI Discussion Paper (May 2013), the "correlation study demonstrated that premium liabilities by lines of business are more correlated compared to claims liabilities; therefore, a lower diversification credit was applied."

Use of the MCT risk factor as the second point on the distribution requires the following considerations:

- The appropriate level of diversification when aggregating multiple lines and potentially LIC and LRC; the actuary would consider the entity's mix and volume of business.
- Adjustment for volatility due to size and other considerations relative to the "average" entity included in the OSFI review. For example, smaller entities tend to exhibit greater relative volatility than larger entities due to increased process and parameter risk, all else being equal.

With the assumption of a lognormal distribution and removing diversification based on the MCT factors, the following table shows the indicated standard deviation by line of business for the LIC and the LRC. The standard deviations should correspond reasonably well with unpaid claims and premium liabilities. The MCT risk factors were scaled to the average of the four largest

[18] Office of the Superintendent of Financial Institutions, "Discussion Paper on OSFI's Proposed Changes to the Regulatory Capital Framework for Federally Regulated Property and Casualty Insurers" (May 2013), 14.

entities included in the OSFI review. The risk factors were also reduced by OSFI's estimate of the average MfAD for each line of business.

| Category | LIC | | | | LRC | | | |
|---|---|---|---|---|---|---|---|---|
| | Standard deviation[19] | Percentile | | | Standard deviation | Percentile | | |
| | | 65th | 75th | 85th | | 65th | 75th | 85th |
| **Personal property** | 12% | 4% | 8% | 13% | 10% | 3% | 6% | 10% |
| **Commercial property** | 10% | 3% | 6% | 10% | 10% | 3% | 6% | 10% |
| **Aviation** | 18% | 5% | 11% | 18% | 13% | 4% | 8% | 14% |
| **Auto liability – BI** | 12% | 4% | 8% | 13% | 10% | 3% | 6% | 10% |
| **Auto – Pers. Acc.** | 12% | 4% | 8% | 13% | 10% | 3% | 6% | 10% |
| **Auto – Other** | 12% | 4% | 8% | 13% | 10% | 3% | 6% | 10% |
| **Boiler & machinery** | 15% | 5% | 9% | 15% | 12% | 4% | 7% | 12% |
| **Credit** | 18% | 5% | 11% | 18% | 13% | 4% | 8% | 14% |
| **Credit protection** | 15% | 5% | 9% | 15% | 12% | 4% | 7% | 12% |
| **Fidelity** | 18% | 5% | 11% | 18% | 13% | 4% | 8% | 14% |
| **Legal expense** | 20% | 6% | 12% | 20% | 13% | 4% | 8% | 14% |
| **Liability** | 20% | 6% | 12% | 20% | 13% | 4% | 8% | 14% |
| **Other approved products** | 18% | 6% | 12% | 20% | 13% | 4% | 8% | 14% |
| **Surety** | 18% | 5% | 11% | 18% | 13% | 4% | 8% | 14% |
| **Title** | 15% | 5% | 11% | 18% | 12% | 4% | 8% | 14% |
| **Marine** | 18% | 5% | 9% | 15% | 13% | 4% | 7% | 12% |

[19] For some lines of business, the higher observed standard deviation on LIC compared to LRC could be explained by the significant proportion of claims paid in the first year, that may have a relatively low volatility. While a few lines of business (such as liability and aviation) do not have significant proportion of claim paid in the first year but have a higher standard deviation on LIC. For these lines, the above table represents the factors observed by OSFI without any adjustments.

In its variability analysis, OSFI determined that a portion of the volatility depended inversely on the size of the entity and the remaining portion of the volatility was not dependent on the size of the entity, with the proportions varying by line of business. These proportions are not disclosed in the OSFI analysis. To the extent that individual entity characteristics differ from the average of the four largest entities contained in the 2013 OSFI analysis, the actuary would adjust the volatility accordingly. Diversification would be included based on entity-specific considerations.

These calculations represent rough approximations of a lifetime 65th, 75th, and 85th percentiles (selected as examples not recommendations) based on the MCT. The findings in the preceding table represent an approximation in a context where an entity has no better information to derive a second percentile point on the distribution of the present value of future cash flows over a lifetime horizon and excludes the effect of diversification across lines of business and between the LIC and the LRC. It is important to note that the calibration of the MCT factors reflects a large entity's relative volatility. To the extent that these parameters are different in a particular entity's RA calculation, the actuary would adjust the percentile factors accordingly. Significant differences are possible. The actuary would take care to check the reasonability of the standard deviations based on the MCT factors considering the facts and circumstances of the entity and the reasonableness of the indicated LRC RA vs. that of the LIC RA.

## Appendix 1: Margins – Brief summary of IFRS 4 CIA Standards of Practice

Subsections 2250 through 2270 of the CIA Standards of Practice[20] provided guidance to actuaries in setting margins for adverse deviations prior to the effective date of IFRS 17. While no longer binding after the effective date of IFRS 17, this guidance might be helpful to actuaries in quantifying the degree of uncertainty in non-financial assumptions, and by extension quantifying the compensation for non-financial risk that the entity might require.

Under subsections 2250 through 2270, the range of margins for claims development was between 2.5% and 20% of the best-estimate assumption. Selections above this range would be appropriate in situations such as:

- unusually high uncertainty; and
- unusually low best estimate resulting in an unreasonably low dollar PfADs.

Selections below this range would be appropriate in situations such as:

- coverage that is reserved at the stop loss limit

Considerations for placement in the ranges would have been similar to those noted in IFRS 17.B91.

[20] Canadian Institute of Actuaries, *Standards of Practice* – Insurance (January 1, 2020), subsections 2250–2270.

## Appendix 2: Simplified calculation of RA based on CoC method

Simplified CoC calculations, such as the example presented in this appendix, could be an alternative way to estimate the RA that allows insurers to use the general CoC concept. The example included in this appendix may provide a more intuitive way to estimate the RA for insurers that have a profit margin or combined ratio target instead of a target return on equity (ROE).

The basic concept is that the target profit margin is allocated between reserve risk, underwriting risk, and other risks that are not relevant to the RA.

The profit margin could be directly determined, in the case of an entity with a target profit margin or combined ratio, or calculated for an entity with a target ROE and premium to surplus ratio. A standard formula can be used to convert a target ROE and a premium to surplus ratio to a target profit margin. A simple formula using ROE, corporate income tax, investment income on surplus, and premium to surplus ratio is:

$$\text{Profit Margin on Premium} = \left[\frac{\text{Target ROE}}{(1\text{-Tax})} - \text{Investment income as a \% of surplus}\right] / [\text{Premium to surplus ratio}]$$

Next, the total profit margin is split between underwriting risk, reserve risk, and other risks that are not relevant to the RA, based on the proportion of the capital allocated to each of these risks. The actuary may rely on ORSA or other processes used to allocate capital to reserve risk, underwriting risk, and other risks.

Using these types of calculations, the actuary would recognize that underwriting risk disappears once the coverage is expired and reserve risk diminishes over time as claims are settled. Thus, using amounts derived from the profit margin on premium, in order to estimate the RA:

- the LRC is assigned both the profit margin associated with underwriting risk and reserve risk; and
- given that the underwriting risk does not exist for the LIC, the LIC is assigned only the profit margin associated with reserve risk.

The RA amount associated with the LIC (i.e., premium multiplied by the profit margin associated with reserve risk) would wind-down in an appropriate manner to reflect the settlement of claims. Assuming that the reserve risk is correlated to the amount of claims that are outstanding and unreported, the actuary could calculate the present value of future cash flows at the beginning of each time period (i.e., the expected reserves) and then determine the present value of this stream of cash flows. As a result, the reserve risk profit margin unwinds as the present value of the stream of present values unwind. This is comparable to the rate at which the RA decreases in the traditional CoC calculations. The applicable profit margin is the RA at that point in time for the LIC.

With these calculations, the confidence level for the RA is based on the distribution of the present value of cash flows, which could be shaped significantly different for LIC versus LRC for some P&C coverages.

Some potential limitations of this approach:

- The proportion of capital allocated to each risk may vary by portfolio or group.
- The profit margin may vary by portfolio or group (different ROE targets and/or different premium to surplus ratios).
- The approach still requires a confidence level to be determined for disclosure purposes, which requires a distribution of the present value of cash flows.
- The approach requires the projection of cash flows for the unwinding of the reserve risk.
- Changes in the allocation of capital by portfolio or group, or by risk, over time, which may result as a change in mix or volume of business, could result in changes in indicated RA.
- Changes in profit margins objectives could result in changes in RA for prior policy years.

**Illustrative example**

Assume that an insurer has only one line of business that it prices with a 10% profit margin. Further assume that a robust ORSA model indicates that capital is allocated 50% for underwriting, 30% for reserve, and 20% for other risks (such as market risk and operational risk).

The profit margins associated with the different risk categories are 5% for underwriting risk, 3% for reserve risk, and 2% for other risks.

The LRC RA would then be calculated as 8% of premium (5% for underwriting risk plus 3% for reserve risk).

The LIC RA for a given policy year would start off at 3% of expired premium and decrease over time, which as a percentage of the present value of future cash flows could be a higher or lower value than the LRC RA.

## Appendix 3: Illustrative example on risk adjustment calculations

### Introduction and assumptions

In the example that follows, ten scenarios were developed, in which a total of three different methods are applied in the determination of the risk adjustment (RA), namely: quantile (confidence level), cost of capital, and margin. For each scenario, one of the three methods was used to estimate the RA and then comparable assumptions that would generate the same RA amount under each of the other two methods are estimated. For each method, there are multiple ways of setting assumptions. This example illustrates one way of doing so for each method.

The worksheets for long tail, short tail and total are all illustrated in the same way. References to the Excel workbook within this commentary refer to the same item on each of these worksheets.

The first four scenarios are based on a confidence level method, the next four scenarios are based on a cost of capital method, and the last two scenarios are based on a margin method.

Scenario Assumptions:

| Assumption | | Scenario | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Yield curve/discount rate | | 2% for all years | | | | | | | | | |
| Confidence level percentile | | 75 | 75 | 90 | 90 | | | | | | |
| Cost of capital | Capital requirement percentile | 99.0 | 99.9 | 99.0 | 99.9 | 99.0 | 99.9 | 99.0 | 99.9 | 99.0 | 99.9 |
| | Risk diversification | 0% for all other risks | | | | | | | | | |
| | Pre-tax cost of capital net of assumed investment income on surplus | | | | | 5.0 | 5.0 | 10.0 | 10.0 | | |
| Margin factor (%) | Long tail | | | | | | | | | 10 | 10 |
| | Short tail | | | | | | | | | 5 | 5 |

Calculations are performed first on an insurance contracts held (“gross”) basis, then on an insurance contracts held less reinsurance contracts held (“net”) basis, and then the implied reinsurance contracts held (“ceded”) RA is estimated as the difference between the gross and net RAs. Two alternative approaches could be followed. The net and the ceded RAs could be explicitly calculated, and the gross RA would be the sum of the two. The gross and the ceded RAs could be explicitly calculated, and the net RA would be the difference between the two.

The allocation of the total RA to each portfolio uses each portfolio's undiversified RA indication as input. Several different methods were used to illustrate the potential impact of each method on the allocation.

Portfolio Assumptions:

1. Contracts have been combined into two portfolios, "long tail" and "short tail".
2. Only liability for incurred claims is considered in the example. We discuss what would be required to expand to include liability for remaining coverage later in the example.
3. Both claims and expense payments are included in the cash flows.
4. Reinsurance coverage is assumed to be as follows:
    a. Long tail non-proportional (excess of loss)
    b. Short tail proportional (20% quota share)
5. Assumptions are documented in the tabs "Long tail" and "Short tail"
6. The present value of remaining payments is based on a probability weighted mean (the actuary's best estimate) as follows:
    a. Long tail: $50 million gross and $40 million net of reinsurance
    b. Short tail: $10 million gross and $8 million net of reinsurance
7. Based on reserve volatility modeling (using a bootstrap or other method), the present value of remaining payments is determined to be reasonably well approximated by lognormal distributions, with standard deviations as follows:
    a. Long tail: $10 million gross and $5 million net of reinsurance
    b. Short tail: $3 million gross and $2.4 million net of reinsurance
8. Based upon the above means and standard deviations, using the method of moments, the underlying lognormal parameters assumed for each portfolio are as follows:
    a. Long tail:
        i. Mu of 10.800 gross and 10.589 net of reinsurance
        ii. Sigma of 0.198 gross and 0.125 net of reinsurance
    b. Short tail:
        i. Mu of 9.167 gross and 8.944 net of reinsurance
        ii. Sigma of 0.294 gross and 0.294 net of reinsurance
9. The rates at which the present value of remaining coverage for each portfolio decreases to zero are as shown in the example. Long tail takes 10 years to decrease to zero; short tail takes two years.
10. The two portfolios are assumed to be 25% correlated. This assumption is for illustrative purposes only.

**Calculation of risk adjustment on a gross and net basis**

*Confidence level method*

The indicated undiversified RA for each portfolio can be calculated directly from the lognormal distribution, with the indicated undiversified RA being equal to the target confidence level less the mean (3b for each of long tail and short tail). In general, the aggregate distribution cannot be so easily directly calculated, and a Monte Carlo approach was followed in R (there is other software that is equally well suited to perform this) to estimate the aggregate distribution, from which the indicated RA was equal to the simulated value of the target confidence level less the mean (3b for total Monte Carlo).

*Cost of capital method*

For each portfolio, and in aggregate:

1. The undiversified required capital at T0 (time 0) (4b) was set equal to the selected risk appetite percentile (4a) of the selected distribution for each portfolio, or the simulated distribution in aggregate (3a), of the present value of future cash flows, less the mean of the present value of future cash flows at T0 (1a).
2. Any diversification with other risks was then applied (4c), to estimate the diversified required capital at T0 (4d).
3. For each portfolio, the beginning of year capital for each year (4g) was set equal to the remaining future cash flows as proportion of T0 (4f) multiplied by the diversified required capital at T0 (4d). For the aggregate distribution, the beginning of year capital for each year (4g) was set equal to the selected risk appetite percentile (4a) of the simulated distribution (3a) adjusted for diversification (4c), less the mean of the present value of future cash flows (1a) at that point in time.
4. The cost of the required capital for each year (4h) was calculated by applying the selected cost of capital rate (4k first column) to the beginning of year capital for each year (4g).
5. The cost of capital for each year was discounted back to T0 (4j) using a discount factor (4i) based on the selected discount rate (4e).
6. The RA (4k second column) was equal to the sum of the discounted cost of capital for each year (4j).

*Margin method*

The selected margin (5a first column) was applied to the mean of the present value of future cash flows (1a) for each portfolio, resulting in a portfolio level RA (5a second column for each portfolio) and summed across portfolios to determine the aggregate RA (5a second column for Total). For the purposes of this illustration, the same margins were assumed to be reasonable for both the gross and net bases.

*Determination of confidence level*

For scenarios in which confidence level was the basis of the RA, it is unnecessary to determine the confidence level as it is an input. For other scenarios, the confidence level can be estimated by determining for the total Monte Carlo simulated results where the total of the RA plus the mean of the present value of remaining cash flows (1a) falls on the aggregate distribution of the present value of future remaining cash flows at time 0 (3a).

*Determination of comparable assumptions for cost of capital method*

When a different method was used to estimate the RA, the risk appetite percentile was fixed at either the 99th percentile or 99.9th percentile for the cost of capital approach, depending on the scenario, in order to back into the required cost of capital.

*Allocation of total risk adjustment to each portfolio*

The allocation of the total RA to each portfolio used each portfolio's indicated undiversified RA or probability distribution as input. There were four different methods used:

1. Confidence level
    a. Using as inputs the implied RA for each portfolio, looking up the overall confidence level on the probability distribution of the present value of future remaining cash flows (3a), less the mean of the present value of future remaining cash flows (1a) at time 0, the overall RA was allocated proportionately to each portfolio.
2. Proportional
    a. Using as inputs the calculated RA for each portfolio, before diversification due to the other portfolio, the same proportional diversification benefit was applied to each portfolio, such that the RA of both portfolios equalled the aggregate RA.
3. Marginal
    a. Using as inputs the calculated RA for each portfolio, before diversification due to the other portfolio, the aggregate RA was compared to the other portfolio's RA to estimate the marginal contribution of each portfolio to the overall RA and the two marginal RAs were then prorated upwards to equal the aggregate RA.
4. Average of proportional and marginal
    a. Take an average of the second and third methods.

**Calculation of the risk adjustment on a ceded basis**

The ceded RA was set equal to the difference between the gross and net of reinsurance RAs. The calculation was performed both in aggregate as well as by portfolio. In this example, only one of the two reinsurance arrangements is on a proportional basis, consequently some of the approaches used in this example to allocate RA to portfolios result in different RA factors on a gross and net basis for the short tail portfolio. Other approaches to calculate RA may result in the same percentage for both gross and net for a portfolio with proportional coverage.

It is important to review the reasonableness of the ceded RA for each portfolio or in aggregate, which may have implications to the selected assumptions of the gross and net RAs. If the net RA is greater than the gross RA then that is usually an indication that an adjustment to an assumption is needed. If a different approach is followed instead of the calculation of the gross and the net, then the remaining basis should be reviewed for reasonableness.

Canadian Institute of Actuaries
Institut canadien des actuaires

# *Educational Note*

# Use of Models

## Modelling Task Force

**January 2017**

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*Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying standards of practice in respect of specific matters. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.*

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# MEMORANDUM

**To:** All Fellows, Affiliates, Associates, and Correspondents of the Canadian Institute of Actuaries

**From:** Pierre Dionne, Chair
Practice Council

Bob Howard, Chair
Modelling Task Force

**Date:** January 26, 2017

**Subject:** **Educational Note—Use of Models**

A revised draft educational note was released to members on July 26, 2016. The task force thanks those who submitted comments. Based on the comments, there are a few clarifications and corrections in the final educational note below, but there are no major changes in thrust.

The subject that was commented on most frequently related to the definition of what is and what is not a model. Some objected to the classification found in section 1.2. The task force acknowledges that there is necessarily some vagueness in the definition of a model and that actuarial judgment is required, particularly near the border of what is and what is not a model. The task force believes that the main distinction contained in the definition is whether there is a simplification of reality as opposed to a calculation of reality itself.

In accordance with the Canadian Institute of Actuaries' (CIA) Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice and Research Documents, this educational note has been prepared by the Modelling Task Force, and has received final approval for distribution by the Practice Council on January 24, 2017.

As outlined in subsection 1220 of the Standards of Practice, "*The actuary should be familiar with relevant Educational Notes and other designated educational material*." That subsection explains further that a "practice that the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation." As well, "Educational Notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them."

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# 1 Background

## 1.1 Reference to Exposure Draft

This educational note is being released at the same time as a change to the General Standards on the use of models. This educational note is intended to be read along with the new standards. The standards address the main principles involved in an actuary's use of models. The educational note expands on the principles to set out more specifics of how an actuary can ensure that good practice is being followed in the use of models. The intent of this educational note is to be principles-based rather than rules-based. The examples are intended to illustrate the principles rather than to describe a single correct way to do things.

The definitions in the Standards of Practice related to models are repeated here for convenience.

.31.1 Model is a practical representation of relationships among entities or events using statistical, financial, economic, or mathematical concepts. A model uses methods, assumptions, and data that simplify a more complex system and produces results that are intended to provide useful information on that system. A model is composed of a model specification, a model implementation, and one or more model runs. Similarly for "to model". [*modèle*]

.31.2 Model implementation is one or more systems developed to perform the calculations for a model specification. For this purpose "systems" include computer programs, spreadsheets, and database programs. [*implémentation du modèle*]

.31.3 Model risk is the risk that, due to flaws or limitations in the model or in its use, the actuary or a user of the results of the model will draw an inappropriate conclusion from those results. [*risque de modélisation*]

.31.4 Model run is a set of inputs and the corresponding results produced by a model implementation. [*exécution d'un modèle*]

.31.5 Model specification is the description of the components of a model and the interrelationship of those components with each other, including the types of data, assumptions, methods, entities, and events. [*spécifications du modèle*]

## 1.2 Examples of Models

In most cases, it is clear what is and is not a model, but in some cases there can be uncertainty. However, the distinction is not necessarily important. An actuary ensures that all calculations are done with "due skill and care". It would not be good practice to use any computer program without considering whether it was sufficiently accurate and suitable for the task.

The main distinction in the standards between a model and a calculation that is not a model is in the documentation required. The standards normally require some documentation for choosing and using a model. There is no requirement in the

standards of practice that an actuary keep any particular documentation of a calculation that is not a model, but for more significant or complex calculations, it may be prudent to retain some documentation.

Whether a model or not, the same standard of care in accuracy applies.

The two lists below are intended to give some examples of what is or is not a model, but neither list is definitive nor exhaustive. Their purpose is to clarify the definition, but ultimately classifying as a model or not will require judgment.

**Examples that are not Models**

1. Adding a column of numbers. There is no simplification of reality. The sum is reality itself. The same is true whether there are a few numbers or so many that they could not possibly be added manually.
2. Calculating a least-squares regression line. A regression line may be used in a model, but calculating a regression line itself is not a model.
3. Spreadsheets used to summarize and reformat information, typically for reporting purposes. The input may come from models, but the summarizing is not a model.
4. Calculating a life annuity factor where the formula and assumptions are prescribed, for example, by standards or regulation. This is not a model because the calculation does not allow for any discretion.

**Examples that are Models**

1. Calculating a life annuity factor where the actuary makes assumptions or where the actuary makes decisions about simplifications. This stands in contrast to example 4 above.
2. Dynamic Capital Adequacy Testing. This is a very complex model that may contain several submodels.
3. Generating a series of random events. The generation of a series of pseudo-random numbers is the application of an algorithm and not a model, but when those numbers are used to represent reality, the whole would be considered a model.
4. Creation of loss development factors (LDFs, also known as chain ladder) to estimate the ultimate incurred losses. While a simple model, the estimation of the age-to-age factors and the application of the ultimate factors are considered a model.
5. Generalized linear model (GLM) techniques used for segmenting an automobile book of business.

### 1.3 Use or Development

This educational note and the associated standards deal with the use of models but not with the development of models. There are robust bodies of knowledge around coding practices, change management, and process management that are typically employed in developing and modifying systems (including models), and actuaries will want to be

assured that good practices for model development and changes have been followed. However, this note focuses instead on tasks such as what is an appropriate model to use in a particular case, what assurance is there that there are no material errors in the model results, and how is the knowledge from the model best communicated to the user.

### 1.4 Model Risk and Risk Rating a Model

The concept of model risk is key to using a model effectively. Because a model is a simplification of reality, there is always risk in using a model. Model risk is focused not so much on the output of the model as on the inferences, opinions, and decisions that flow from the modelling.

Various strategies would be employed to mitigate model risk. These strategies are employed when actuaries do the following:

- Choose a model for a task;
- Use the model (one-time or ongoing) or oversee its usage; and/or
- Communicate results of that model.

In determining the potential mitigation activities, the actuary would consider the level of risk that the model poses; i.e., use a risk-based approach. Model risk exposure can be considered along two scales: severity and likelihood of failure in a model.

The first is the potential severity of a model failure, or "how bad can it be?" While it is difficult to quantify this, we can provide guidance in terms of looking at the following:

- The financial significance of the results that the model produces. Severity is greater for a model that is used for a major balance sheet item than for a model that is used to decide if a particular strategy is directionally correct.
- The importance of decisions being made using this model and how much the results of this model contribute to that decision. For example, one could be using several models to make a key decision, and in this case, each model's individual contribution to the exposure is lower.
- Frequency of use. A model that is used frequently will have a much larger potential total severity than one used very infrequently because the same failure could be repeated many times until found. Conversely a model that is used infrequently is more subject to being misunderstood or misused than one that is used frequently.
- The non-financial impact. There could be a reputational impact and/or opportunity cost of getting it wrong. Even if there are no immediate financial outcomes, a model failure could lead a company to jeopardize its standing with regulators, competitors, and customers. A model failure could lead the company to miss a potential opportunity.

The second metric to consider is the likelihood of a model failure. This will generally be based on looking at the following:

- The complexity of the model. More complex models have greater potential for misuse and misunderstanding of the results, and there are many more calculations that need to be checked.
- Required level of knowledge and expertise of users. Inadequate knowledge and training of users could contribute to failures in the processing of the model, e.g., wrong inputs or failure to deal appropriately with known limitations. There could also be cases where the users misunderstand the model's purpose and try to use it for another purpose for which it has not been tested.
- Adequacy of documentation.
- Sufficiency of testing.
- The degree of independence of the one validating the model from the developer of the model.
- Adequacy of peer review.

Typically, the actuary has limited control over severity. Also typically, the actuary can exert considerable control on likelihood through matters such as choosing better models, exercising greater care in validation, and employing tighter controls for model runs. Both the severity and the likelihood of potential model errors would be considered in risk rating the model.

(This educational note assumes that a risk rating is done, but there are acceptable alternatives. The essential point is to assess the risk of the model and determine the effort expected in validating and other model related tasks. When there are many models within a firm, a risk-rating scheme promotes efficiency and consistency. When there are few models, a risk-rating scheme may not be of benefit.)

Appendix 1 presents examples of risk rating a model out of many that are acceptable. The actuary is encouraged to follow an approach to risk rating that works well in his or her business. It is important to have a consistent approach to risk rating. The amount of effort in choosing, testing, validating, documenting, and controlling a model would reflect the risk rating. All models require some work to ensure that they are being used appropriately and accurately; those with higher risk ratings require more extensive work to mitigate model risk. When the risk rating is very low, little effort is warranted; when the risk rating is high a great deal of effort is warranted. In the extreme, a model may be unacceptable because its risk-rating is too high.

A protocol for periodically updating the risk-rating would normally be part of the risk-rating approach. The following considerations may guide the decision to update a risk-rating:

- Reassess if a model fails;

- Reassess on a regular cycle, e.g., every five years;
- Reassess when model use changes; and
- Reassess if the impact of results change greater than [some tolerance level set in advance].

# 2 Choice of Model

## 2.1 New (or Substantially Changed) Model

Before using any model, an actuary would become comfortable that it is well suited to the use that the actuary intends, that the model works correctly, that available data conform to the model requirements, and that the output is in a form that the actuary can use. The actuary would be alert to limitations in the model that may prevent it from providing reliable results under certain circumstances. The model's risk rating is a key factor in determining the extent of the effort performed in deciding whether a model is acceptable. In particular, what is described below in this subsection is not to be taken as the minimum standard for all models. The amount of effort in each area would vary according to the risk rating.

*Review Specification*

The actuary will want to understand the model specification to verify that the methods used are sound, that assumptions that are embedded are appropriate, that the data can be provided in the form required, and that the model design contemplates all the necessary assumptions. For example, if valuing pension plans, the model needs to allow for a variety of forms of benefit, both immediate and deferred, and support the desired valuation method. The model would need a facility for adjusting the base mortality table, and it is desirable to support a two-dimensional improvement scale.

If using a third-party model, the actuary may have no access to the full specification. In this case the actuary will want to perform the appropriate tests to assess any important aspects not covered in the user's documentation.

It is important to ensure that the format and interpretation of data available to use with the model coincides with or can be made to coincide with what is contemplated in the model specification. For example, some systems use sex codes 1=male and 2=female, but others use 1=female and 2=male. Some interest rates may be assumed to be effective annual, but others may be semi-annual compound.

*Validate Implementation*

The actuary cannot simply assume that the model correctly implements the specification. The actuary tests the model and ideally compares it with other tested models to verify the calculations. The greater the financial significance of the work for which the model is to be used, the more thorough the testing. It is good practice to keep documentation on the testing done. It is also good practice to maintain a set of test cases that can be run through the model or a new version of the model to verify that the

model is still correct. For a model with a higher risk-rating, it may be wise to run an entire live file through successive versions of the model.

There are many techniques that can be used in validation; not all techniques are appropriate to all models. Sensitivity is discussed at greater length in subsection 2.5. Backtesting may be helpful in some cases. Comparison to other models is useful when feasible.

The actuary would ensure that an adequate review was conducted on the model code and parameters used in the implementation. In many cases the actuary will have no access to the code, but the actuary can often ask the developer to describe what review was done to ensure that the code and hard-coded parameters are correct.

An actuary who is validating a model may consider having another actuary peer review his or her work.

*Dealing with Limitations*

Understanding limitations of models is important but rarely easy.

Actuaries would be aware of which events are independent of each other and which are correlated. For example, the mortality of individuals is normally independent, but lapse rates may be correlated to interest rates.

Actuaries would be alert to assumptions that are fixed or embedded in a model. For example if the income tax rate is hard-coded, the model cannot be used to assess sensitivity to changes in the tax laws.

Some approximations are not robust over a full range of potential outcomes. For example, if a mortality improvement scale which is two-dimensional is approximated by a one-dimensional improvement scale, the approximation may not be good enough for a pension plan of mostly young lives with long deferral periods, but it may be fine if most of the liability is for retired lives.

The actuary would understand the range of potential circumstances and uses for which the model was designed and tested. The model may appear to work correctly for all test cases, but it may not handle the full range of situations in the real world. A model may be appropriate for pricing, but it may not be able to handle all cases needed in valuation.

*Documentation[1] of Model Choice*

It is good practice for the actuary to keep documentation on why he or she decided a particular model to be suitable, how it was determined to be sufficiently accurate, and what limitations, if any, were found.

[1] *Documentation* refers to the actuary's working papers and is distinct from internal or external user reports. Although documentation may not be made generally available, it is important that the documentation be available to those reviewing an actuary's work and to those who later assume responsibility for the actuary's work.

### 2.2 An Existing Model Used in a New Way

This subsection assumes that the steps in subsection 2.1 were previously followed for the model.

In this case, the actuary can be confident that the calculations are accurate, but the new application may be affected by limitations in the model that were not relevant in the initial application. Therefore, the actuary would consider what limitation, if any, is to be reviewed, perform appropriate testing, and document this work. The actuary would also consider whether the risk rating for the model has changed and, if it is higher, more validation work may be required. Completing this work effectively expands the range of standard applications for the model.

### 2.3 Models Approved for Use by Others

It commonly happens, particularly within a large firm, that one team validates a model that is to be used by others. It is generally appropriate for an actuary using a model to use the work of the others who validated the model, provided that the actuary agrees that the validation process was adequate.

The team doing the validation will typically disclose, at least in summary, that the steps in section 2.1 were followed. The actuary using the model would review the report on validation and retain evidence to show that the actuary is aware of the work done and is satisfied that the work was sufficient.

In some cases, an actuary may choose to rely on the validation done by others outside his or her firm. Unless the actuary has access to the documentation of the validation, the burden of proof for accepting such a validation would be higher than for a validation done within the firm.

### 2.4 Models Outside an Actuary's Area of Expertise

Actuaries may need to use and/or rely on models outside of their expertise: for example, credit-scoring models, economic capital models, or enterprise risk management models that contain features and components outside the expertise of the actuaries using the models.

In these circumstances, the actuary would determine the appropriate level of reliance on other experts. In doing so, the actuary would consider the following:

- If the individuals on whom the actuary is relying are considered experts in their field of practice;
- The extent to which the model has been reviewed by experts in the applicable field; and
- The risk rating associated with the model.

The actuary would make a reasonable attempt to understand the following:

- The basic workings of the model including its inputs, outputs, and general approach;
- The testing and validation work that was completed; and
- The model's complexity and the control framework used.

Further, the actuary would disclose, in the appropriate documentation and disclosures, any reliance on models created by other experts.

In cases where an actuary is required to use a model built using software in which he or she is not expert, the actuary would attempt to gain such understanding as to be convinced that the validation and control framework followed is sufficient to provide confidence in the results produced by the model.

### 2.5 Sensitivity Testing

Sensitivity testing is useful for validating a model, for understanding relationships between inputs and outputs, and for developing a sense of comfort with a model.

The actuary would consider the assumptions that will be input into the model. The actuary would test and observe the impact of varying these assumptions in validating the model.

The actuary would also consider testing a range of assumptions that may be outside the expected or currently observable range. The actuary can then observe if the model continues to operate soundly under these "what if"-type conditions. A simple example might be using zero or negative interest rates and ensuring the model result is theoretically correct.

The actuary would also ensure that the interplay between related assumptions is considered. For example, in a life insurance valuation model, a change to death rates impacts the mortality charge but also impacts the persistency of the block and may therefore have second-order impacts on the actuarial present value of the maintenance expense cash flows. The actuary would consider sensitivity testing assumptions singly and then in combination to ensure that the model works correctly and that he or she understands these interactions.

The actuary would be alert in the sensitivity testing to cases for which the relationship between input and output is non-linear or linear only over a limited range. In either case, the actuary would test a wider range of inputs so that the impact on output is more thoroughly understood.

Sensitivity testing is sometimes used to enhance the results produced by the actuary. In that case, the actuary may consider not only reporting on the chosen assumption but also on the sensitivity around that assumption. Aggregate risk models sometimes require dependency assumptions to model how different types of risk interact. The actuary usually would have to employ judgment in the choice of assumption to reflect dependency. Thus the actuary may produce results under one correlation matrix but disclose what happens under alternative correlation matrices.

The range of values tested would reflect the range of assumptions that is reasonably expected to be found in practice. Particularly in the case of stochastic models, it is important to test a range wide enough to cover the cases that would be generated randomly.

### 2.6 Preparing to Use the Model

Having chosen which model to use, the actuary will typically follow a set of steps before it can be used.

The model may require some customizing to fit the particular situation. Any changes to the specifications would be recorded, and any changes to the implementation would be tested.

Particularly in the case of a model that is used repeatedly and with a high-risk severity, it is good practice to document the process to be followed. Subsection 1540 provides relevant guidance on the control process. A process document might include the following:

1. Instructions for obtaining input data;
2. What authorization is required for setting input assumptions;
3. Step-by-step instructions on how to run the model;
4. Checks to be applied to model inputs and outputs;
5. Reconciliations required from prior runs; and
6. A flowchart of the process.

## 3 Minor Changes to a Model

When a model is changed, either section 2 or this section will apply. It is a matter of actuarial judgment which is more appropriate. If in doubt, it may be better to apply section 2.

Models are rarely static over time. A model may be changed to fix a bug, to change a hard-coded parameter, to handle a new situation, to reflect regulatory changes, etc.

Each time that a model is changed there is risk that the new feature will be implemented incorrectly, that something not planned to be changed will stop working correctly, that the documentation will be rendered inconsistent with the model, or that the change will not be correctly communicated to those who use the model.

At a minimum the actuary using a model that has been changed would be wise to run test cases through both the original and the changed model to verify that the differences, if any, are reasonable. If the changed model can handle cases not handled before, it may be useful to compare a new case handled by the changed model with a similar case handled by the previous version of the model.

The actuary may choose to rely on work done by others in validating a changed model in a manner similar to that described in section 2.3.

# 4 Use of Models

It is typical for an actuary to use the same model for a variety of cases, whether for valuation, pricing, or other purpose. Doing so makes good use of the actuary's time and is economical for the client. To use the terms in the standard, the actuary produces many model runs (possibly varying data input and assumptions) with the same model specification and model implementation.

## 4.1 Validation of Data Input

Data need to be "sufficient and reliable". It is assumed that there is a proper control process in place for obtaining the data to be used by the model. Subsection 1530 is directly relevant for data used in a model. The presence of faults in the input data represents a limitation in the model which may need to be disclosed. If the actuary does not assume responsibility for the data, then he or she would so report. Model risk increases when there are flaws in the data and may increase when the actuary assumes no responsibility for the data.

For example, if an insurance company is obtaining input to a valuation model for a material line of business, the actuary might consider the following:

*Sufficiency*

1. Do the data meet the requirements of the model specification?
2. If the model will be used repeatedly, are the data in a consistent format every time?

*Reliability*

1. Reconciliation to other sources (preferably audited):
   - For example, does an asset file reconcile to the balance sheet?
   - For example, do the total benefit/premium/records, etc., reconcile to data in other financial records of the company?
2. Summarize and compare input data to prior periods, if applicable.
3. Check and investigate data points that are outliers for possible errors. Examples are age 115, zero benefit, zero premium.
4. How are missing data handled? Is a data assumption made or is an error generated? Is it flagged?
5. Data assumptions would be reviewed periodically to assess their appropriateness.
6. Is the size of the data file consistent with prior periods?

### 4.2 Validation of Assumptions

In some cases, assumptions are not set through the model specification process but vary with each model run. In these cases, the input assumptions need to be as well controlled as the input data. Section 1700 is relevant for the assumptions required for a model run. The following considerations may be useful:

- Regular peer review (internal and external) of the assumptions.
- Are the intended assumptions the ones used in the model? Care should be taken with models used repeatedly that the assumptions are updated as needed on each model run.
- Are model assumptions unchanged unless they were meant to be changed?

### 4.3 Validation of Results

At a minimum, the actuary would ensure that the results of a model run are reasonable in light of the input. For models with higher risk rating, there would be stronger controls on the output. For many models, the following checks may be applied:

- Are outputs consistent with inputs? For example, do the output totals agree with the totals of input for number of lives or policies and the amount of insurance or income?
- How many errors were generated and what amount was involved? Is it within an established tolerance? Has the root cause of errors been identified and rectified to an acceptable tolerance?
- Are results as expected, both in direction and magnitude?
- If there are several model runs at different dates, are the latest results consistent with the trend?
- Are the results consistent with the impacts obtained from any sensitivity analysis that was conducted?
- Attribution analysis—has the change in the results from the prior period been explained?
- Testing the predictive value of the model using test data separately from data used for the parameterization.

### 4.4 Documentation

It is good practice for the actuary to retain documentation on the version of the model used and the inputs and outputs of the model. The model would not normally be mentioned in the user report. The actuary would not need to repeat in the documentation for a model run the issues dealt with when choosing that model.

### 4.5 Periodic Validation

It is good practice for the actuary to repeat the validation of a model periodically even if it has not been changed. (If the model has changed, see section 2 or 3.) A model with a higher risk-rating would be validated more frequently. A periodic validation can identify where assumptions or approximations, validated initially, are no longer appropriate and relevant in the current environment. An actuary new to a role in which an existing model has been routinely used would be wise to review the model and review the documentation of the model from the actuary's predecessor.

### 4.6 Stochastic Models

In many respects, a stochastic model is the product of performing numerous runs of a deterministic model. As such, the recommendations of the other subsections of section 4 would generally continue to be followed. However, as indicated by 1540.09, when a stochastic model is used, additional consideration would be given to certain other elements.

When the model inputs and/or assumptions vary with each run, the actuary would ensure that the distribution of such inputs and/or assumptions is reasonable (e.g., in a model that forecasts pension valuations, is the distribution of valuation discount rates reasonable), paying particular attention to items such as the trend, mean, median, symmetry, skewness, and tails of such distributions. The actuary would also ensure that the correlation between each of the inputs and/or assumptions is appropriate. For example, in a model that forecasts pension valuations, is the correlation between valuation discount rates and government long bond yields appropriate? In an economic capital model, is the correlation between the unemployment rate and the gross national product appropriate?

Another question that could be addressed is the potential change of the correlation between variables at the mean as compared to the tail ends of the respective distributions. For example, for property and casualty (P&C) exposures, P&C lines of business are usually considered to be moderately correlated at the mean. However, in catastrophic and infrequent situations, the dependency assumption between casualty and property lines of business increases significantly.

In validating the results of a stochastic model, it is impractical and infeasible to review the results from every simulation. Instead, the actuary might typically review the following:

- The results from a carefully chosen sample of realized deterministic scenarios, covering an appropriate range of inputs and/or assumptions (e.g., a median-type scenario, a high-inflation-type scenario, a low-inflation-type scenario, etc.).
- The distribution of output results for reasonability, again paying particular attention to items such as the trend, mean, median, symmetry, skewness, and

tails of such distributions (e.g., in a model that forecasts pension valuations, is the distribution of forecasted funded status reasonable).

- Whether the results of the chosen deterministic scenarios are consistent with the distribution of stochastic results (e.g., are the results of the median-type deterministic scenario consistent with the median of the distribution of stochastic results).
- The relationships, or distributions of relationships, between certain inputs, assumptions and/or output results to ensure they are appropriate and internally consistent (e.g., in a model that forecasts pension valuations, is the distribution of the relationship between discount rates and funded status appropriate).
- Scenarios that lie near a boundary that is particularly important to the application; for example, a calculation of CTE99[2] would be more concerned with scenarios in the far tail.

The actuary would be mindful that the result of a stochastic model is usually itself a statistical estimate that has its own mean and variance. The variance can be lessened by running more scenarios, but it cannot be eliminated. For example, if the purpose of the model is to estimate CTE99, two successive runs (with different random seeds) will usually give different results due to random fluctuation. Neither is the true answer; both estimates are equally valid. The fact that there is no single right answer presents challenges in communicating the results.

## 5 Reporting

The actuary is referred to section 1800 of the Standards of Practice for general guidance on user reports, both internal and external. The nature of the engagement (or assignment) will determine whether the model is mentioned in an actuary's user report. In most cases, an actuary is engaged to express a professional opinion, such as an actuarial liability associated with a pension plan or the price for an insurance product. The actuary may use a model to inform the opinion, but it is not relevant to the user how the opinion was formed as long as it was done in accordance with accepted actuarial practice (i.e., modelling is incidental to the engagement). In other cases, an actuary is engaged to model a particular situation or to assess a model (i.e., the engagement involves modelling), and in those cases explicit comments on the model and its results would be relevant to the user.

[2] Conditional Tail Expectation at 99 percent probability. That is, the mean of all scenarios that represent the worst 1 percent of results.

### 5.1 When Modelling is Incidental to the Engagement

The actuary would not normally mention the model unless there are limitations that need to be disclosed. The purpose of the model is to inform the actuary, who informs the user. The model is not intended to inform the user directly.

In cases where the model is not communicated to the user, one might say that the actuary bears the entire model risk.

### 5.2 When the Engagement Involves Modelling

In this case, the actuary would typically refer directly to the model. Whether the model is primary or secondary in the report would depend on whether the engagement was to model or assess a model or to form an opinion supported by modelling. As appropriate, the actuary's disclosure could range from describing the model and its results in considerable detail to comprising only a brief overview. The actuary may explain why the model was considered appropriate, but the work done in validation would not likely be mentioned. The actuary may have completed hundreds of model runs, but only those most relevant to the engagement would be mentioned in the report.

The actuary would disclose any relevant limitations in the model.

If model results are miscommunicated or misunderstood, it could lead to poor decision-making or other adverse consequences. Therefore, it is important to have clear and audience-specific communication of the intended use of the model, any limitations, and key approximations.

### 5.3 Limitations

In some cases the model may have limitations that bear directly on the ability of the actuary to fulfil the engagement. In such cases, regardless of the terms of the engagement, the actuary would disclose that a model was used and that the limitations of the model could materially impact the results. For example, if the actuary had any concerns with the quality of the data used in the model, the actuary would disclose those concerns, or if the model ignores or simplifies the treatment of a factor that the actuary considers relevant, the actuary would disclose that fact.

## 6 Hypothetical Examples

The following examples are not real but represent some typical situations that actuaries face. They are constructed by actuaries who have been in a similar situation and have given consideration to what would represent good practice in using a model. As with any example, these cannot be taken as prescriptive. Rather, they are intended to give actuaries a framework for addressing their own situations.

### 6.1 Life Insurance Valuation Using AXIS

Amy Anders has worked on the quarterly valuation of a block of non-par term insurance policies for the last two years. The company has just updated to a new version of AXIS.

The company has standard change management practices in place. Amy's work related to the valuation model involves the following steps:

1. The model risk-rating is moderately high for several reasons: the potential impact on the company's financial statements, amount of user customization in the model, and the level of expertise required to understand the model.
2. There have been control practices in place within the operating unit, in terms of change management practices, layers of documentation, and model review.
3. Her work with the new version of AXIS is therefore to do the following:
    a. Review the list of changes since the earlier version and establish an expectation of impact on the model. Identify if there is a need to isolate the impact on particular blocks of policies beyond some standard breakdowns.
    b. Convert the model and understand the impact on key outputs from the valuation. She decides to use the prior quarter-end data set per her company's change management protocol. She reruns the batches from beginning to end and reviews the impact by plan, term structure, as well as a few other key product features. She notes that the overall impact was immaterial, but the impact was concentrated to a small plan that was newly introduced last year.
    c. This was consistent with her expectation, as there was a bug fix in the new version related to certain commission tables.
    d. She documents the changes in the company's model version control system and puts comments in the data set notepad.
    e. She shares her documentation with teams who might use the model for dynamic capital adequacy testing (DCAT), Canadian asset liability method (CALM), economic capital, and other items in the future. She also shares the information with the pricing team.

### 6.2 Pension Valuation Using Third-Party Software

Paul Penny is a pension practitioner doing a regular valuation for a pension plan using his firm's valuation software that is licensed from a third party. Paul has been with his firm for 10 years and did the previous valuation of this plan using the same third-party software, although it was using a prior release. Paul understands that the software was thoroughly vetted by an internal team of actuaries when it was initially licensed by his firm and that this team also vets subsequent releases, but this will be the first time he will personally be using the current release. Paul's work related to the valuation model (distinct from doing the valuation itself) involves the following steps:

1. Paul considers whether the third-party software is the appropriate model for performing the valuation, and determines that it is.

2. Paul assesses the risk rating of the choice of model and comes to the conclusion that it is high, owing to the financial significance of the results to the users, the regulatory nature of the valuation filing, and overall reputational risk associated with the work.
3. Paul reviews the documentation provided by the third party to assess the extent of the changes between the release Paul used for the previous valuation and the current release. He pays particular attention to changes that could be applicable to the plan he is working on. Based on this assessment, Paul considers whether the principles of section 2 or section 3 would be most applicable.
4. In Paul's opinion, the principles of section 3 are most applicable in this case. He is also of the opinion that this release revision represents a moderately-low risk activity.
5. Paul contacts his firm's internal team that is responsible for licensing and vetting the software. They provide Paul with the quality control report from the third party, and he satisfies himself that appropriate regression testing was applied to the current release (and intermediate releases) and that the third party has rigorous controls for approving each release. The internal team also directs Paul to a source for internal working papers that indicates that they have reviewed the third-party's reports and performed their own independent testing on a control group of plans.
6. Based on step 5, Paul is comfortable that the validation process for this release was adequate.
7. Paul retains a copy of the documentation noted in step 5 and evidence of his review in his working papers.
8. Paul proceeds with the valuation of the pension plan using the new release.

### 6.3 P&C Valuation Using the Chain Ladder Method

Claude Cousteau is valuing a block of automobile claim liabilities using the chain ladder method. His company developed software for implementing this method several years ago, and the software continues to be used without modification. Claude's work related to the model involves the following steps:

1. Considers whether the current model is applicable, and decides that no modifications are required. The model is rated medium to high owing to the importance on the financial statements.
2. Updates the incurred loss triangles to include an additional valuation period.
3. Selects the types of averages (high/low, three year, five year, others) to be used for the age-to-age estimation.
4. Determines if the data has sufficient credibility to be used on its own or if benchmarks are required to supplement to historical data.
5. Reviews the historical age-to-age factors for anomalies and extremes.

6. Smooths and/interpolates the resulting age-to-age factors as required.
7. Selects the age-to-age factor based on the results of the model.
8. Reviews the tail factor and makes a determination of the tail factor value based on a documented methodology.
9. Runs the model to calculate the loss development pattern, which will be used to project the ultimate incurred losses.
10. Prints the result of the evaluation in appendices of the report, documenting the whole valuation of the liabilities.

### 6.4 Determination of the Value of Lost Wages for a Suit Involving Personal Injury

Ed Evans is an actuarial evidence actuary who has been engaged to determine a present value. Ed wrote the software for the model three years ago and tested and documented it thoroughly at that time. Ed recognized the model as important to his business because it is used for a significant proportion of his work. He has repeated the validation each time there has been a major change such as a new version of operating system or a new mortality table. He has used the model for dozens of similar cases and it remains valid. Ed's current work related to the model involves the following steps:

1. Decide whether his standard model is applicable in this particular case, and determine that it is.
2. Enter the file reference for the case, the date of birth, the date of the accident, salary, and other parameters on the input screen for the program.
3. Run the model to calculate the present value.
4. Print the screen (showing input, output, and timestamp for the run) and file it.

### 6.5 Forecasting Capital Requirements Using a Spreadsheet Model

Ruth Rock has been assigned the task of forecasting quarterly capital requirements for a small reinsurer. In order to improve on the method used in prior years, Ruth decided to develop a new model using a spreadsheet, which will take inputs from the entity's valuation output and finance department, as well as current yield curves and investment analysis. Ruth's work related to the model involves the following steps:

1. Ascertain the risk-rating of the proposed model by considering what the model will be used for, financial significance, frequency of use, complexity, inputs, and outputs. In this case, a moderately high risk rating was assigned. Document the result.
2. Gather the inputs.
3. Confirm the inputs with other sources: e.g., capital form submitted to the regulator, income and balance sheet data, Bank of Canada website.
4. Decide on assumptions to be used regarding sensitivity of required capital to interest rate changes:

a) Sensitivity analysis; and

b) Review actual impacts from prior periods.

5. Build the model using the prior year-end as the starting point, to forecast the next quarter (which is already past, but is being used as the initial validation of the model).
6. Validate and refine the model using several prior quarters. Highlight and document any limitations.
7. Document the process for updating the model.
8. Run the model in parallel with the prior method for a few quarters, and reconcile model output to actual results. Refine the model and update documentation if necessary.
9. Revalidate the model after year-ends, updating assumptions and documentation if necessary.

### 6.6 Using a New Economic Scenario Generator in an Internal Capital Model

Nigel Nyambi is the actuary in charge of the implementation of a new third-party vendor economic scenario generator (ESG) model for use in the economic capital calculation for segregated fund guarantees. Nigel's project plan includes the following tasks:

1. Review the model features, limitations, controls, parameters, and outputs and document any concerns.
2. Review the scenarios produced by the vendor under various parameters to assess whether they are reasonable and meet the needs of the company; e.g., do the risk neutral scenarios produce market values that are consistent with Canadian market prices? Document the outcome of the assessment.
3. Risk rate the ESG model and document the outcome and rationale. The model is rated as high risk because of the following:
    a. There is a high variability of the segregated fund capital to different ESG scenarios;
    b. The ESG model is used for senior management and board reporting of capital;
    c. Although the reserves are currently small, this product is a key user of capital for the company; and
    d. The third-party software code is open and can be changed by a user.
4. Set up and parameterize the ESG model to produce risk-neutral and real-world scenarios with the prior quarter's assumptions and parameters. Review the results produced.

5. Have the model validated by another person/team with the requisite knowledge and experience who is not part of Nigel's reporting chain. Review the model validation report and fix any material issues.
6. Prepare for implementation, e.g., update process and controls documentation.
7. Implement model.

## Appendix 1: Risk-Rating Schemes

There are many valid approaches to risk rating a model. The point is to assess how risky a model is so that the amount of work done to choose, validate, and document a model may be appropriate to the circumstances. Two are presented here as examples.

**A Uni-dimensional Approach**

For example, a small- to medium-sized direct life insurance company could use a table similar to the following to evaluate its valuation models.

Review each risk factor below and place the score (1 to 4) beside each risk factor. Add up the total score at the end of the table.

| Risk Factor | Score (1–4) |
|---|---|
| A. Size of block valued (percent of total actuarial liability):<br>1. 0–2 percent<br>2. 3–5 percent<br>3. 6–10 percent<br>4. Greater than 10 percent | 3 |
| B. Strategic importance of block valued:<br>1. Closed to new business, run-off mode.<br>2. Minimal new business, infrequent re-pricing.<br>3. Moderate new business or new product line, or occasional re-pricing or product redesign.<br>4. Significant new business or major product line, frequent re-pricing or product redesign. | 3 |
| C. Complexity of model:<br>1. Simple traditional-type product, few input files, single valuation method, single scenario, infrequent assumption updates.<br>2. More than one product line or valuation method, more frequent assumption updates.<br>3. More complex products with more product features (e.g., universal life), or many valuation methods, scenario-based assumptions.<br>4. Stochastic-type valuation with several scenarios and assumptions, complex products (e.g., segregated funds). | 2 |

| | |
|---|---|
| D. Expertise of model users and/or key person risk:<br>1. High level of understanding by model users—understand how the model works, products being valued, expected results. More than two persons capable of running, updating, and analyzing model results.<br>2. Good understanding of model and products by model user(s) and/or more than two persons capable of maintaining and explaining model results.<br>3. Some understanding of model and products by model user(s) and/or at least two persons can maintain/explain model.<br>4. Limited understanding of model and products by model user(s) and/or only one person capable of running, updating, and analyzing results. | 2 |
| E. Level of documentation and review:<br>1. Model fully validated and documented (assumptions, process, limitations, etc.), and documentation updated as needed with appropriate peer review and sign-offs.<br>2. Good documentation and frequent peer review.<br>3. Partial documentation and occasional peer review of model.<br>4. No documentation, model not peer reviewed. | 3 |
| **Total Score out of 20:** | 13 |

Assessment of Score:

| | |
|---|---|
| 1—5 | Minimal model risk—keep current practice, little or no changes needed |
| 6—10 | Lower model risk—reduce risk factors if possible, focusing on sections D and E |
| 11—15 | Moderate model risk—reduce risk factors if possible, focusing on sections D and E, by having more frequent reviews of models, updating documentation and training additional staff if appropriate |
| 16—20 | High model risk—high focus, immediate improvements or frequent model validation needed |

**A Two-Dimensional Approach**

A model is assessed separately for severity and likelihood of failure, and the risk-rating is determined by balancing the two aspects.

| Risk-Rating for a Model | | | | | |
|---|---|---|---|---|---|
| | | Severity | | | |
| | | Negligible | Low | Medium | High |
| Likelihood | Low | Very Low | Very Low | Low | Medium |
| | Medium | Very Low | Low | Medium | High |
| | High | Low | Medium | High | Extreme |

The following is an example of a worksheet to determine severity and likelihood:

**General information**

Model: BBB Model
Owner: Director, XYZ
Users: Senior actuarial analyst – ABC
Main Purpose: Valuation of actuarial liabilities
Other Purposes: Regulatory capital based on actuarial liabilities

**Determining Severity and Likelihood**

| | Questions | Response | Review & Analysis | Score |
|---|---|---|---|---|
| Severity | What is the ratio of product line act liabilities/total act liabilities? | 20% | High >10%<br>Med 2-10%<br>Low < 2% | High |
| | What is the main use? | Valuation | Directly impacts general ledger | High |
| | What are the other uses? | Regulatory capital | Impacts reporting to regulator | High |
| Likelihood | What platform or software is used? | AXIS | In use for a number of years and well understood by actuarial staff | Medium |
| | What is the level of expertise of the users? | There is a training program for the senior analysts. There is review by the director | Agreed | Low |

| | | | | |
|---|---|---|---|---|
| | What is the quality of the documentation of the process, methodology and assumptions? | Meets internal audit and S-OX standards | Agreed | Low |
| | Is there any manual manipulation necessary? | Some manipulation of data for unexpected errors on the quarter-end | Agreed | Low |
| | Any model failures in the past three years? | None | Agreed | Low |

**Overall assessment:** assessment is *medium* as the high severity is mitigated by the controls to reduce likelihood.

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# THE CAP ON NON PECUNIARY GENERAL DAMAGES: WHERE IS IT GOING AND HOW DOES IT AFFECT LITIGATION?

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# THE CAP ON NON-PECUNIARY GENERAL DAMAGES:
## Where is it going and how does it affect litigation?

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## INTRODUCTION

On October 19, 2006, the Supreme Court of Canada dismissed the Leave to Appeal application in *Lee v. Dawson*[1] without reasons. In doing so, the Supreme Court of Canada ended speculation that the time had come to revisit the cap on general damages.

This paper will review the cap on general damages and the key cases that have dealt with this issue over the past 30 years.

## THE *TRILOGY*

The cap on non-pecuniary damages became law in Canada as a result of the 1978 trilogy of Supreme Court of Canada decisions in *Andrews v. Grand & Toy Alberta Ltd.*[2], *Teno v. Arnold*[3], and *Thornton v. Prince George School District No. 57*[4].

In *Andrews*, Mr. Justice Dickson concluded that the time had come to stabilize and bring some consistency to awards for non-pecuniary or general damages. This was viewed as necessary for the following reasons:

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[1] [2006] S.C.C.A. No. 192
[2] [1978] S.C.J. No. 6
[3] [1978] S.C.J. No. 8
[4] [1978] S.C.J. No. 7

1. The claim of a severely injured person for damages for non-pecuniary loss is virtually limitless. The fact that there is no objective yardstick for measuring such loss leaves this area open to inconsistent and widely extravagant awards.

2. Damages for non-pecuniary losses are not really "compensatory" as no money can provide true restitution. Accordingly, such damages should be viewed as simply providing additional money to make life more endurable.

3. Under the law, the plaintiff will be fully compensated for future loss of income and future care costs which are arguably more important for ensuring that the injured person is well cared for in the future.

4. Exorbitant awards for general damages can lead to an excessive social burden (i.e. unaffordable increases in insurance and social costs).

In order to bring stability to this area of the law, Mr. Justice Dickson essentially established a rough upper limit on awards for non-pecuniary loss. He did so with the following statement:

> I would adopt as the appropriate award in the case of a young adult quadriplegic like Andrews the amount of $100,000. Save in exceptional circumstances, this should be regarded as an upper limit of non-pecuniary loss in cases of this nature.[5]

There are two important observations that can be drawn from the reasons of Mr. Justice Dickson in *Andrews.*

The first observation is that a fundamental justification for imposing an upper limit on non-pecuniary losses is the underlying assumption that pecuniary losses will be fully compensated. This results in "a co-ordinated and interlocking basis for compensation."

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[5] [1978] S.C.J. No. 6 at p. 21

The second observation is the assumption that non-pecuniary claims in the most serious cases, if left unregulated, would lead to "extravagant" awards and a subsequent burden on society. On this point, Mr. Justice Dickson said the following:

> This area is open to widely extravagant claims. It is in this area that awards in the United States have soared to dramatically high levels in recent years. Statistically, it is the area where the danger of excessive burden of expense is greatest.[6]

This line of reasoning was further developed by Mr. Justice Spence in *Teno v. Arnold* as follows:

> The very real and serious social burden of these exorbitant awards has been illustrated graphically in the United States in cases concerning medical malpractice. We have a right to fear a situation where none but the wealthy could own or drive automobiles because none but the wealthy could afford to pay the enormous insurance premiums which would be required by insurers to meet such exorbitant awards.[7]

## SUBSEQUENT CASES

### *Fenn v. City of Peterborough*[8]

This case came before the Ontario Court of Appeal in 1979, a little more than a year after the *trilogy* had been handed down by the Supreme Court of Canada.

In this case, the Court of Appeal seized on the words of Mr. Justice Dickson that the cap should not be exceeded *save in exceptional circumstances*. The Court of Appeal was dealing with a grievously injured plaintiff. There was little doubt that the plaintiff's crushing and disabling injuries moved her at least the $100,000 plateau. The question before the Court was whether or not that plateau should be exceeded.

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[6] [1978] S.C.J. No. 6 at p. 19

[7] [1978] S.C.J. No. 8 at p. 28

[8] [1979] O.J. No. 4312

In that case, the Court of Appeal relied on two factors which justified an award that was somewhat higher than $100,000. Firstly, the trial took place approximately 1 ½ years after the latest of the trials in the *trilogy* cases. It was assumed that there had been an appreciable erosion in the value of money. Secondly, it appeared that the plaintiff had suffered more substantial pain than any of the plaintiffs in the *trilogy*. Accordingly, the Court of Appeal determined that the appropriate figure for general damages in the case before it was $125,000.

This decision was not appealed and accordingly, the Supreme Court of Canada was never given an opportunity to comment on the reasons and conclusions of the Ontario Court of Appeal. It remains the only appellate level decision that exceeds the cap imposed by the *trilogy*

***Lindal v. Lindal***

In 1981, the same issue came before the Supreme Court of Canada in *Lindal v. Lindal*[9]. The issue before the Court was narrow: Under what circumstances should a trial Judge exceed the rough upper limit of $100,000 for non-pecuniary losses established the *trilogy*.

At the trial level, the plaintiff was awarded $135,000, a figure in excess of the rough upper limit. This case was then appealed to the British Columbia Court of Appeal which allowed the appeal and reduced the amount of the award for non-pecuniary damages from $135,000 to $100,000 based on the *trilogy*.

The case was subsequently appealed to the Supreme Court of Canada and once again, Mr. Justice Dickson rendered that Court's decision. Mr. Justice Dickson repeated the rationale in support of a rough upper limit as set out in his decision in *Andrews*. Mr. Justice Dickson re-iterated the point that such damages were not meant to

[9] [1981] S.C.J. No. 108

"compensate" the injured person but rather provide additional money to make life more endurable.

Accordingly, it was not proper to compare the nature of the injuries as between various plaintiffs to determine whether or not they were more or less seriously injured than those plaintiffs in the *trilogy*. Rather, the limit of $100,000 was to be viewed as the upper limit for all such similar cases. This would provide a measure of uniformity and predictability in this difficult area.

Finally, Mr. Justice Dickson indicated that the quantum of the award itself should not be increased to reflect the impact of inflation. Rather, the specific amount of $100,000 should be increased upon proof of, or agreement as to, the effect of inflation on that amount over time.

It is from this decision that the Courts have subsequently viewed the cap as $100,000 indexed for inflation to a precise point in time, which as of December of 2006 was $311,483.

***ter Neuzen v. Korn***[10]

In 1995, the Supreme Court of Canada once again commented on the rough upper limit on non-pecuniary damages. In this case, the plaintiff had been infected with AIDS as a result of an artificial insemination. At trial, the jury awarded $460,000 for general damages. The Court of Appeal ordered a new trial on the basis that the award for general damages could not exceed the rough upper limit as set by the *trilogy*.

Mr. Justice Sopinka, writing for the Court, stated that the *trilogy* had imposed as a "rule of law" a legal limit for non-pecuniary damages in personal injury cases.[11] Furthermore, Mr. Justice Sopinka indicated that the appropriate approach in cases where jury verdicts

[10] [1995] S.C.J. No. 79
[11] [1995] S.C.J. No. 79 at p. 29

exceed the rough upper limit was for the Court to essentially substitute its own award for general damages at the amount of the cap.

With this decision, the rough upper limit evolved from a judicial policy directive to a "rule of law" which not only reinforced the Supreme Court of Canada's view on the rough upper limit but arguably further formalized it in law.

**The Decisions in *Lee v. Dawson***

Trial Level

In *Lee v. Dawson*, a young plaintiff sustained an extremely serious brain injury as well as serious facial injuries. The jury awarded general damages of $2,000,000. After hearing arguments from counsel, the Trial Judge felt he was bound by the *trilogy* and reduced this award to $294,600 which was the indexed amount for the cap at that time. [12]

The plaintiff appealed seeking to restore the jury's verdict by arguing that the cap should not apply.

Court of Appeal

The main ground for the appeal was based on the equality provisions of Section 15 of the *Charter*. The plaintiff conceded that the *Charter* did not directly apply as this was litigation between private parties. However, the plaintiff relied upon a body of case law[13] which held that the common law must conform to "charter values" and the cap essentially offended such "charter values". It was also noted that the *trilogy* predated the *Charter* and had never been subject to a *Charter* analysis.

In making this argument, the plaintiff essentially stated that the cap discriminated against seriously injured victims of negligence. In that regard, less seriously injured

[12] [2003] B.C.J. No. 1532 at p. 3
[13] See *Hill v. Church of Scientology* [1995] 2 S.C.R. 1130 at paragraph 95

victims of negligence were entitled to full compensation for pain and suffering. However, full compensation was denied to the most seriously injured victims of negligence as a result of the cap.

The plaintiffs also argued that seriously injured victims of negligence were also discriminated against when compared to seriously injured victims of other torts, for example, defamation where the cap on general damages did not apply. [14]

The British Columbia Court of Appeal rejected this argument based on "charter values". In doing so, they concluded that the plaintiff's argument in this regard was flawed as general damages were never meant to provide "full" compensation to injured plaintiffs. In addition, the Supreme Court of Canada had held that the amount of award for general damages should not depend upon the seriousness of the injury or how it compared to the injury of other plaintiffs as illustrated by the following passage:

> In *Lindal v. Lindal,* the Court defined the nature of non-pecuniary damage awards. The Court clearly indicated that the non-pecuniary awards are not fully dependent upon the gravity of the injury. Their purpose is not compensatory; rather, the objective is to provide a substitute for the lost amenities in an effort to improve the victim's condition and to make the plaintiff's life more bearable.[15]

In attempting to compare seriously injured plaintiffs to less seriously injured plaintiffs in order to illustrate discrimination, the plaintiffs misapprehended the essential rationale for both awarding general damages and the need for the rough upper limit, namely bringing stability and predictability to awards for general damages while at the same time avoiding excessive awards and their corresponding social costs.

In addition to this *Charter* argument, the plaintiff also made a number of additional arguments as to why the cap should not apply, including the following:

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[14] See *Hill v. Church of Scientology* [1995] S.C.J. No. 64
[15] *Lee v. Dawson* [2006] B.C.J. No. 679 at p. 16

- The Supreme Court of Canada used language in the *trilogy* suggesting that the rough upper limit was just that and not a strict rule of law.
- Considerations contemplated by the Supreme Court in the *trilogy,* such as skyrocketing awards and insurance premiums had proven to be false.
- The upper limit precluded juries from keeping up with the rapid pace of social, economic and technological change in society.
- The cap is inconsistent with modern community values, which are more accepting of disabilities than previously.
- The rough upper limit disregards juries and the importance of juries outweighs the hypothetical benefits that the guidelines might bestow.
- The establishment of the upper limit constitutes a radical change in the common law contrary to the accepted "incremental method" of achieving such changes.
- The cap produces unjust results for plaintiffs whose situations differ from the plaintiffs in the *trilogy.*
- Finally, the cap is simply arbitrary and lacking a logical foundation.

After highlighting these arguments, the Court of Appeal chose not to respond to the merits of these arguments but rather stated in a concluding paragraph the following:

> I agree with the plaintiff and the intervenor that the time may have come for the rationalization or conceptional underpinning for having a rough upper limit on non-pecuniary damages to be re-examined. However, I am not persuaded that is open to this Court to proceed on the footing that the trilogy establishing the rough upper limit is not binding on us. Some of the submissions made by the appellant and the intervenor advocating a reconsideration of the rough upper limit seem to me to be compelling but, in the end, this Court cannot overturn the trilogy.

Certainly, anyone reading this paragraph is left with the impression that the British Columbia Court of Appeal was sympathetic to the plaintiff's arguments for revisiting the rationale for the cap but simply felt that this was for the Supreme Court of Canada to decide.

Supreme Court of Canada

On October 19, 2006, the Supreme Court of Canada dismissed the plaintiff's application for Leave to Appeal. This was done without reasons. Accordingly, the rough upper limit remains the law in Canada.

Any discussion as to why the Supreme Court of Canada declined to hear the appeal in *Lee v. Dawson* is pure speculation. However, it is a probably safe to conclude that the Supreme Court continues to support the rationale for having a cap on general damages.

Perhaps the following 1981 quote from Professor Beverly McLachlin [as she then was] provides some insight in this regard:

> The concept of "full compensation" does not provide a comprehensive rationale for damages for personal injuries. It is applicable only to pecuniary losses. It provides no theoretical justification for damages for non-pecuniary losses. Full compensation in relation to non-pecuniary losses is meaningless, and arguably dangerous, since such losses by their nature cannot be fully restored.[16]

Also, for an excellent discussion on the *trilogy* and a thesis in support of the cap, it is worthwhile to review Roger Oatley's 2005 article "Is It Time To Revisit The Trilogy". Essentially, Mr. Oatley argues that the cap works because it creates an economic climate where insurers continue to underwrite property and casualty insurance. This, in turn, ensures that "innocent people recover full compensation for economic loss within an economic context that has finite resources." It also supports a stable and predictable system of law in this area which is essentially fair to most people.[17]

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[16] What Price Disability? A Perspective On The Law of Damages For Personal Injury, McLachlin [1981] Cdn. Bar Rev. Vol. 59 at p. 7.

[17] Is It Time To Revisit The Trilogy, Oatley [2005] The Law Society of Upper Canada Special Lectures 2005 (Irwin Law) at p. 174.

**Cases To Which The Cap Does Not Apply**

There have been cases that have awarded general damages to plaintiffs in excess of the cap.

For example, in *S.Y. v. F.G.C.*[18], the British Columbia Court of Appeal rejected the notion that the cap applied to claims for damages for sexual assaults.

In *Hill v. Church of Scientology*[19] the Supreme Court decided that there was no cap for defamation and the plaintiff was awarded $300,000 in general damages.

In *Young v. Bella*[20] heard October 20, 2005, the Supreme Court commented on the issue of the cap for non-pecuniary damage awards outside the personal injury context.

In that case, the Appellant was a university student taking courses toward her goal of being admitted to the School of Social Work and becoming a social worker. As a result of a missing footnote to her term paper, the Respondent professor speculated that the case study attached as an appendix might be a personal confession to having sexually abused children (a 'cry for help'), which gave rise to the release of this information to the child protection agency suggesting that she was a suspected child sex abuser. The information was also discussed amongst three university professors, communicated to the RCMP, social workers and her boyfriend's sister. The appellant sued the Defendant professor and University complaining that their actions 'combined to put in motion a series of events that would forever shape the course of [her] future by affecting her reputation in the community, her ability to complete her education and by reducing her income-earning capacity'.

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[18] (1996), 78 B.C.A.C. 209:

[19] [1995] 2 S.C.R. 1130

[20] [2006] S.C.J. No. 2

A jury found the University's treatment of the appellant to be negligent and further found that as a result of this negligence her chosen career prospects had been destroyed; it awarded $839,400 in damages, including $430,000 in non-pecuniary damages. A majority of the Court of Appeal set aside the jury award.

The matter was appealed to the Supreme Court of Canada and it was argued that the cap should apply to the award for non-pecuniary damages. In rejecting this argument, the Supreme Court stated at page 17:

> The respondents have not established why the policy considerations which arise from negligence causing catastrophic personal injuries, in the context of accident and medical malpractice, should be extended to cap a jury award in a case such as the present. This argument was rejected in relation to damages for defamation in *Hill v. Church of Scientology of Toronto*, [1995] 2 S.C.R. 1130, at paras. 170-76. In our view, the case for imposing a cap in cases of negligence causing economic loss is not made out here either. As Macfarlane J.A. commented in *S.Y. v. F.G.C.* (1996), 78 B.C.A.C. 209:
>
> > There is no evidence before us that this type of case has any impact on the public purse, or that there is any crisis arising from the size and disparity of assessments. A cap is not needed to protect the general public from a serious social burden, such as enormous insurance premiums.

From these passages it is quite clear that the "social costs" issue, as a reason for the cap, remains a paramount concern of the Supreme Court of Canada.

**Conclusion**

The cap on general damages imposed by the *trilogy* remains a "rule of law" in Canadian jurisprudence. The Supreme Court's very recent refusal to revisit this issue in *Lee v. Dawson* likely stands as a good indication that the cap will remain with us well into the future.

Furthermore, subsequent decisions demonstrate that the original rationale for the cap, particularly the concern regarding consequential social costs, remains valid and relevant to the Supreme Court of Canada 30 years later.

# Facility Association

**By Rachel Dutil, FCIA, FCAS**

**CAS Study Note**
**May 2008**

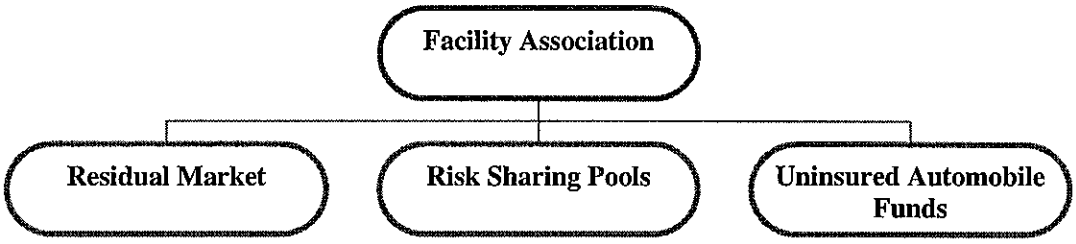
# Facility Association

The Facility Association is a Canadian entity whose goal is to ensure that automobile insurance is available for every owner and licensed driver of motor vehicles who require it to legally operate their vehicles. The insurance industry created the Facility Association in June 1977 as an unincorporated, non-profit organization whose role is to administer the involuntary residual market of automobile insurance on behalf of the voluntary/private sector automobile insurance industry across Canada.

Every insurer licensed to write automobile liability insurance in any jurisdictions served by the Facility Association must become and remain a member of this organization. The Facility Association currently operates in the following provinces and territories: Alberta, New Brunswick, Newfoundland & Labrador, Northwest Territories, Nova Scotia, Nunavut, Ontario, Prince Edward Island, and Yukon. The only provinces in which it does not operate are the three provinces with provincial public automobile insurance (i.e., British Columbia, Manitoba and Saskatchewan) and Quebec.

## Organization

The Facility Association, which also operates in Alberta under the name of "Market Availability Plan," accomplishes its mission of ensuring automobile insurance availability through two types of risk sharing mechanisms: risk sharing pools and the more traditional residual market. It also administers the Uninsured Automobile Funds in the four Atlantic Provinces as required by the respective provincial Insurance Acts.




In Quebec, the Groupement des Assureurs Automobiles (GAA) administers a risk sharing pool mechanism called the Plan de Repartition des Risques (P.R.R.) which essentially fulfills the same role as for those administered by the Facility Association in other provinces.

### Facility Association Residual Market (FARM)

The FARM provides a residual automobile insurance market for owners and operators of personal and commercial motor vehicles who may otherwise have difficulty obtaining automobile insurance. It operates in all jurisdictions served by the Facility Association.

In each jurisdiction, the Facility Association contracts with a few member automobile insurance companies to issue and administer policies. These insurance companies, known as Servicing Carriers, also adjust claims on behalf of the Facility Association.

All policies written by the FARM through a Servicing Carrier are subject to the rates, rules, and classification of the Facility Association. These rates, rules, and classification require regulatory approval for all jurisdictions served by the FARM.

## Facility Association

Under the FARM, agents and brokers who are unable to find automobile insurance coverage for one of their clients can contact a Servicing Carrier who will issue a Facility Association policy for the particular client. As a result, every policyholder insured through the FARM knows that their insurance policy is part of the residual market.

It is important to note that the Facility Association only allows Servicing Carriers to underwrite policies under its FARM mechanism if the policy includes at least the statutory minimum automobile coverage in the jurisdiction concerned and the particular risk is a "Residual Market Risk." In all other cases, the agent or broker must place the risk with their voluntary insurance markets. The Facility Association's Plan of Operation defines a Residual Market Risk as a risk which includes coverage in connection with:

1) any motor vehicle that is not a Private Passenger Vehicle; or

2) any Private Passenger Vehicle with respect to which an insurer to whom an application has been made to insure the risk is authorized at law to decline to issue or refuse to renew a contract of insurance in respect of such risk.

The financial results of the vehicles insured through the FARM are pooled among all insurance companies licensed to write automobile insurance in the province based on participation ratios described below. This is due to the fact that every insurance company licensed to write automobile insurance in a jurisdiction served by the FARM is required by law to belong to the Facility Association.

### Risk Sharing Pools

The risk sharing pools allow automobile insurance companies to transfer certain of their personal automobile insurance exposures to an industry-wide pool. While these exposures do not qualify for the FARM, insurance companies believe that they represent a higher risk of loss. As such, risk sharing pools essentially act as industry-wide reinsurance mechanisms that are largely invisible to both consumers and intermediaries.

The Facility Association administers risk sharing pools in Ontario, Alberta, New Brunswick, and Nova Scotia. In each of these jurisdictions, member companies underwrite individual policies according to their own rates and rules. They then have the option of keeping such business for their own account or transferring it to the risk sharing pool based on certain minimum requirements. However, the act of transferring a specific risk to a particular risk sharing pool must be invisible to both the consumer and the insurance intermediary.

Similar to the FARM, the financial results of the risk sharing pools are pooled among all insurance companies licensed to write automobile insurance in the province, who are required by law to belong to the Facility Association.

The Uninsured Automobile Funds

In the four Atlantic Provinces (i.e., New Brunswick, Newfoundland & Labrador, Nova Scotia, and Prince Edward Island), the Facility Association also administers funds which provides financial compensation for damages to persons who cannot obtain satisfaction for their damages under a contract of automobile insurance and where there is no other insurance or where the other insurance is inadequate with respect to the damages claimed. The respective provincial Insurance Acts govern the payment of these claims.

The Facility Association monitors the investigation, defense and final settlement of these claims through the assistance of designated law firms and insurance companies.

## Board of Directors and membership rights

The Board of Directors, composed of elected or appointed representatives from member insurance companies as well as insurance brokers, manages and controls the affairs and business of the Facility Association. The Board has the authority to implement many key decisions on behalf of the Facility Association. Some examples of these responsibilities, which are explained in further details in Facility Association's Plan of Operation, are:

— Considering and approving suggested rate changes and rate filings

— Authorizing expenses

— Establishing and maintaining standards to be followed by Servicing Carriers and members using a risk sharing pool

— Appointing committees and sub-committees to assist them with specific issues

As mentioned above, every insurer licensed to write automobile liability insurance in any jurisdiction in which the Facility Association is qualified to operate is required to be a member of the Facility Association.

Members of the Facility Association may vote on matters submitted to them by the Board of Directors. A member's total volume of automobile third party liability direct written premiums for the latest available full calendar year in all jurisdictions in which the Facility Association has operated determines the number of votes that it is entitled to. If a particular matter affects a single jurisdiction, then only members operating in such a jurisdiction can cast their votes, and the respective weight of their votes will depend on their premium volume in the jurisdiction.

For more information on the specific rules regarding the Board of Directors and the rights of member companies, please refer to the Facility Association's Plan of Operation.

## Participation Ratios and Sharing

The Facility Association's Plan of Operation lists five classes of business that determine a member's participation in the Facility Association:

1) Private passenger non-fleet non-pool automobile business

2) All automobile business other than that included in (1) or transferred to a risk sharing pool

3) Business transferred to a risk sharing pool other than a pool operated in Alberta, New Brunswick, or Nova Scotia and other than a catastrophic claim fund established to facilitate the payment of Ontario statutory accident benefits claims due from a specified insolvent insurer

4) Business transferred to a risk sharing pool operated in Alberta, New Brunswick, or Nova Scotia

5) All uninsured or unidentified motorist claims and all amounts expended in connection with a pool or catastrophic claim fund established to facilitate the payment of Ontario statutory accident benefits claims due from a specified insolvent insurer

The Facility Association uses each member's participation ratio, which it determines separately for each of the above classes of business, to allocate the profit or loss for the each of the above classes of business at the end of each fiscal year. The basis of determination of the participation ratio varies by jurisdiction. According to the Plan of Operation, the Facility Association must determine the profit or loss separately for each accident year, in each jurisdiction.

## Risk Sharing Pools

There are currently five risk sharing pools operating in Canada. The key purpose for each of these pools is to assist the member companies who provide automobile insurance under their normal rates and underwriting rules to certain owners and licensed drivers who represent a higher risk of loss when compared to the company's overall portfolio.

The Facility Association, in its role as the administrator for all five risk sharing pools, dictates through its Plan of Operation the various rules that insurers should follow in order to participate in this risk transfer mechanism. Each of the risk sharing pools operates in one specific jurisdiction, and member companies operating in this jurisdiction can transfer risk into the pool.

It is important to understand that the Facility Association designed the risk sharing pools to promote stability in the marketplace by making it possible for companies to accept risks for which they believe that their prices are not totally adequate. Therefore, the general expectation is that risk sharing pools, by their very nature, will operate on an overall basis at a financial loss.

Every company shares in the financial results of a particular pool based on a participation ratio determined using a proportion of their total voluntary private passenger, non-fleet, third party liability direct earned exposures (car years) that is not ceded to a risk sharing pool for the applicable province. For Ontario, the participation ratio also depends on the number of risks ceded to the risk sharing pool. (Please refer to the Facility Association's Plan of Operation for more details on the participation ratios.) As every automobile insurance company licensed to do business in a specific province is required to be a member of the Facility Association, a company who decides not to transfer any of its risks to the risk sharing pool will still be allocated a share of the total financial results of the pool.

## Facility Association

There are five minimum requirements that a risk must meet in order to be eligible for transfer to one of the pools:

1) Each pool accepts only private passenger vehicles.

2) A residual market risk should be insured through the FARM and is therefore not eligible to for the risk sharing pools.

3) Each risk transferred into the pool should carry at least the minimum third party liability statutory limit required in the applicable province.

4) The member company must follow the appropriate classification and rating procedures and have requested all appropriate documentation.

5) The premiums charged for the insurance transferable to the pool must be the approved premiums for such a risk.

For each of the risks transferred, it is up to the member company who performs the underwriting to provide the coverages and limits that it finds appropriate for such a risk. However, each of the pools has specific limitations that define the proportion of each eligible risk that can be transferred to the pool. There are also limitations on the transfer of certain coverages (e.g., maximum limits or minimum deductibles). Member companies who decide to offer higher limits or lower deductibles must therefore carry the excess coverages on their own accounts.

One other common requirement for the pools' operations relates to the actual transfer of premiums. For each risk, the transfer premium should be the premium actually charged by the insurance company for the applicable limit or deductible, net of premium payment service charges charged to the insured. The member company will then receive a percentage of the transferred written premium as an expense allowance to settle all incurred expenses including acquisition, operating and loss adjustment costs but not including premium tax and professional fees.

Finally, for each of the pools with specific restrictions on the total allowable transfer from each member company, the transfer limits are a percentage of the voluntary private passenger non-fleet third party liability direct written car years for the applicable province in the immediate preceding calendar year.

### Ontario Risk Sharing Pool

The Facility Association established the Ontario Risk Sharing Pool in 1993. It was the first automobile risk sharing pool in Canada. This pool assumes business from Ontario member companies for Ontario risks only, subject to the minimum transfer requirements listed above.

One difference for the Ontario Pool is that the pool only covers 85% of every risk transferred while the remaining 15% stays in the account of the member company. All other pools cover 100% of the risks transferred, subject to the applicable maximum limits and minimum deductibles for the coverages provided.

## Facility Association

To ensure that the Ontario Risk Sharing Pool does not serve as a marketing tool by member companies, the Facility Association has set the maximum total allowable transfer to 5% of the member's voluntary private passenger non-fleet written exposures.

### Alberta Risk Sharing Pool

The Facility Association administers two risk sharing pools in Alberta: a "Grid Pool" and a "Non-Grid Pool". Both of these pools commenced operations on October 1, 2004 and assume business from Alberta member companies for Alberta risks only. One of the main differences between the two pools is the number of risks that companies may transfer to each.

The "Grid Pool" allows Alberta automobile insurance companies to transfer into the pool their private passenger insurance exposures that are subject to the statutory maximum premium. There is no limit to the number of risks that a member company can transfer into the Alberta "Grid Pool". This is based on the philosophy that the law requires insurance companies operating in Alberta to accept risks for which they have no control over price, resulting in little to no control over the financial results for this particular book of business.

The "Non-Grid Pool" is similar to the Ontario Risk Sharing Pool. It allows member companies to transfer to the pool any eligible private passenger automobile insurance exposure they underwrite which exhibits higher risk characteristics. However, the Facility Association has set the maximum total allowable transfer to 4% of the member's voluntary private passenger, non-fleet, written exposures that are not transferred to the Grid Pool. The purpose of the Non-Grid Pool is to help companies cope with the "take all-comers" environment in Alberta.

### New Brunswick Risk Sharing Pool

The New Brunswick "First Chance" Risk Sharing Pool commenced operations on January 1, 2005. This pool assumes business from New Brunswick member companies for New Brunswick risks only, subject to the minimum transfer requirements previously described.

The New Brunswick Risk Sharing Pool provides a means for New Brunswick insurers to transfer private passenger automobile insurance exposures for which at least one household member is entitled to receive the "recently licensed drivers with good driving records" discount (also called the "First Chance" discount).

Similar to the Ontario Risk Sharing Pool and the Alberta Non-Grid Pool, the Facility Association set a maximum total allowable transfer of 8% of the member's voluntary private passenger, non-fleet, written exposures for insurers participating in this pool.

### Nova Scotia Risk Sharing Pool

The "Inexperienced Driver" Risk Sharing Pool is the most recent pool created by the Facility Association. It commenced operations on January 1, 2007. This pool assumes business from Nova Scotia member companies for Nova Scotia risks only.

The key characteristic of this pool is that it is designed to accommodate inexperienced drivers with good driving experience. Therefore, in addition to the minimum transfer requirements listed above, companies can only transfer risks for which at least one household member is a driver with less than six years of driving experience and who did not have any accidents or convictions over that period.

Similar to the Alberta Grid Pool, there is no limit to the number of risks transferred by members to the Nova Scotia Risk Sharing Pool.

## Conclusion

The Facility Association is an organization that was created by and for the Canadian insurance industry. It serves a very important role in ensuring the availability of automobile insurance coverage for Canadian drivers. This study note summarizes some of the key elements of the operations of this organization. For further information and details regarding the topics covered above, please refer to the Facility Association's Plan of Operation.

FACILITY Association

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**TO:** **MEMBER OF FACILITY ASSOCIATION**

**ATTENTION:** **CHIEF EXECUTIVE OFFICER**

**BULLETIN NO.:** **F2020-050**

**DATE:** **JUNE 29, 2020**

**SUBJECT:** **REPLY REQUESTED: MAIL VOTE - PLAN OF OPERATION AMENDMENTS, RISK SHARING POOLS HARMONIZATION**

The Facility Association (FA) Board of Directors (Board) has proposed the attached amendments to the Articles of Facility Association's Plan of Operation, and is seeking members' approval for them.

## Background

In February of 2014, the Board of Directors directed FA Management to begin exploring possibilities for harmonizing the Risk Sharing Pools (RSPs).

A Working Group composed of industry members was constituted and undertook a review in accordance with the Facility Association's Board approved Guiding Principles, providing industry consultation, research and full consideration of numerous options. The main tenets of the Working Group's Guiding Principles included:

- Conducting a review in the context of FA's mission, vision and values;
- Considerations that any proposed amendments to the RSPs would maintain or increase the availability of automobile insurance to the consumer;
- Proposed changes would not deliberately favour one type of insurer over another.

In October 2019, the FA Board deliberated on the Working Group's recommendations and passed a resolution to proceed with working towards the following changes to Risk Sharing Pools:

1. **Ontario**: Amending the 85% sharing (premium and claims) to 100% cession;
2. **Alberta (Non-Grid)**: Amending the Non-Grid RSP member transfer limit from 4% to 5%;
3. **New Brunswick**: Amended the RSP member transfer limit from 8% to 5% as well as expanded the eligibility criteria to allow all private passenger use vehicles from the current restrictions for inexperienced operators; and
4. **Nova Scotia**: Amend the RSP member transfer limit from 'none' to 5% as well as expand the eligibility criteria to allow all private passenger use vehicles from the current restriction for inexperienced operators.

- On May 11 2020, the Facility Association Board of Directors passed a resolution approving **amending the Alberta Non-Grid RSP member transfer limit from 4% to 5% effective January 1, 2022.**

**FA Plan of Operation proposed changes:**

**The following changes require amendment to the Plan of Operation and are recommended by the Board of Directors for members' approval:**

1. The **Ontario Risk Sharing Pool** proportion of risk (premium and claims) transferred to the RSP will be amended from the current 85% to 100%, to align with the other RSPs.
2. The **New Brunswick Risk Sharing Pool** will be amended to allow for the transfer of all PPV class vehicles in alignment with the Ontario, Alberta Non-Grid and Newfoundland & Labrador Pools.
3. The **Nova Scotia Risk Sharing Pool** will be amended to allow for the transfer of all PPV class vehicles in alignment with the Ontario, Alberta Non-Grid and Newfoundland & Labrador Pools. A member transfer limit, to be set by the Board, will be established.

Pending member approval and regulatory approval of the above Plan of Operation changes, the FA Board will be asked to approve resolution establishing the member transfer limit at 5% for both New Brunswick RSP and Nova Scotia RSP.

Members should be aware that no changes are proposed to the Alberta Grid Pool, which has no transfer limit as long as risks are subject to the grid cap. Members should also be aware that no change is proposed at this time to the Ontario Risk Sharing Pool sharing formula, which will retain its current structure of loss sharing based 50% on market share, and 50% on pool usage.

The Facility Association Plan of Operation is authorized by statute in the jurisdictions Facility Association serves. Amending the Plan requires approval of the proposed amendments by at least 51% of member votes within 60 days of the vote mailing and the appropriate regulatory approvals.

Please note the specific proposed Plan amendments that requires approval are the following:

- Ontario RSP Article XI.1, 5(b)
- New Brunswick RSP Article XI.3, 3 (a), 3(b)
- Nova Scotia RSP Article XI.4, 1, 3 (a), 13
- Plan of Operation and Rules of Operation Article XXI, 3

A table showing the proposed Plan wording compared to the existing Plan wording is enclosed as **Appendix 1** for your convenience.

Please review the proposed changes and vote using the ballot provided as **Appendix 2**. Please note only one ballot is required from each member company group. For ease of reference, **Appendix 3** shows all member company groups and their corresponding vote allotments.

**Although the mail vote will formally close after 60 days, please return the completed ballot at your earliest convenience.**

If the proposed amendments are approved, members will be advised of the relevant effective dates and implementation timelines.

If you have any questions regarding the proposed changes to the Plan and/or the voting process, please contact me directly at 416-644-4915 or at smatheson@facilityassociation.com.

Saskia Matheson
President & CEO

Attached.

| Article | Section / Current Version (As at July 1 2020) | Proposed Amendment | Reason for Change |
|---|---|---|---|
| **Article XI.1 Ontario RSP** | **5. (b)**<br>During the first 12 months of operation of the Ontario Pool any risk transferred will be transferred as to 100% for the period that it is in force during that 12 month period. Thereafter all transfers and all risks previously transferred and in force will be 85% for the account of the Ontario Pool and 15% for the account of the member | **5. (b)**<br>*Any risk transferred will be transferred at 100%. The Board may from time to time by resolution set the percentage of a risk to be retained by the members for their own accounts, and establish maximum transferable limits and minimum deductibles with respect to risks transferred.* | Amend the 85% cession to 100% cession, and match the wording to harmonize with the other Risk Sharing Pools providing the FA Board with the authority to amend the retention percentage where required. |
| **Article XI.3 New Brunswick RSP** | **3. (a)** The following are the requirements for a risk to be eligible for transfer to the New Brunswick Pool:<br><br>(i) The risk includes coverages on a motor vehicle with respect to which one or more household members is entitled to receive the "recently licensed drivers with good driving records" discount in connection with automobile insurance as established and defined by the New Brunswick Insurance Act and Regulations thereunder;<br><br>(ii) The vehicle is used in whole or in part as a Private Passenger Vehicle, provided that where such vehicle has a non-Private Passenger Vehicle use in addition to a Private Passenger Vehicle use only the coverage with respect to the Private Passenger Vehicle use is eligible for transfer and in the event that such transfer results in liability arising from a non-private passenger use of the vehicle that liability will be that of the transferring member and not of the New Brunswick Pool;<br><br>(iii) The member has followed all appropriate classification and rate procedures and has requested previous insurer reports and drivers record abstracts in order to verify the entitlement to a “recently licensed drivers with good driving records” discount and to allow the determination of the appropriate classification and rate; and<br><br>(iv) The risk is insured against Third Party Liability for at least the statutory limit. | **3. (a)** The following are the requirements for a risk to be eligible for transfer to the New Brunswick Pool:<br><br>*(i) The vehicle is used in whole or in part as a Private Passenger Vehicle, provided that where such vehicle has a non-Private Passenger Vehicle use in addition to a Private Passenger Vehicle use only the coverage with respect to the Private Passenger Vehicle use is eligible for transfer and in the event that such transfer results in liability arising from a non-private passenger use of the vehicle that liability will be that of the transferring member and not of the New Brunswick Pool; and*<br><br>*(ii) The member has followed all appropriate classification and rate procedures and has requested previous-insurer report(s) and driver record abstract(s); and*<br><br>*(ii) The risk is insured against Third Party Liability for at least the statutory limit; and*<br><br>*(iv) The premiums charged by the member to the insured for those parts of the insurance that are transferable to the New Brunswick Pool are in accordance with its approved premiums for such risk* | Remove subsection (i) and the portion of subsection (iii) which limits RSP to First Chance discount holders, add new subsection (iv) requiring risks to be appropriately rated and classified. |

| Article | Section / Current Version (As at July 1 2020) | Proposed Amendment | Reason for Change |
|---|---|---|---|
| **Article XI.3 New Brunswick RSP** | **3. (b)** A risk purportedly transferred to the New Brunswick Pool which was not eligible for transfer at that time due to a failure to comply with one or more of requirements (i), (ii) or (iii) due to an intentionally incorrect classification or rate or assignment of entitlement to a "recently licensed drivers with good driving records" discount will be considered ineligible for transfer, the purported transfer shall be deemed to be invalid and all claims, expenses and receipts or credits will be for the account of the submitting member. This provision shall not apply to a risk in relation to a specific term of transfer where a period ending the later of 24 months from the date of such transfer or 2 months after the first audit of the member following such transfer has expired. | **3 (b)** A risk purportedly transferred to the New Brunswick Pool which was not eligible for transfer at that time due to a failure to comply with one or more of requirements set out above *will be considered ineligible for transfer, the purported transfer shall be deemed to be invalid and all claims, expenses and receipts or credits will be for the account of the submitting member. This provision shall not apply to a risk in relation to a specific term of transfer where a period ending the later of 24 months from the date of such transfer or 2 months after the first audit of the member following such transfer has expired.* | Remove reference in section 3.b to "recently licensed drivers with good driving records" |
| **Article XI.4 Nova Scotia RSP** | **1.** The Association hereby establishes a risk sharing pool (herein called the "Inexperienced Driver Pool") into which Nova Scotia members are entitled to transfer, subject to the provisions hereinafter set out, the applicable percentage of any Nova Scotia risk that satisfies the Eligibility Requirements with respect to such Pool. | **1.** The Association hereby establishes a risk sharing pool (herein called the "*Nova Scotia Pool*") into which Nova Scotia members are entitled to transfer, subject to the provisions hereinafter set out, the applicable percentage of any Nova Scotia risk that satisfies the Eligibility Requirements with respect to such Pool. | Remove reference to "Inexperienced Drivers Pool" |
| **Article XI.4 Nova Scotia RSP** | **3. (a)** The following are the requirements for a risk to be eligible for transfer to the Inexperienced Driver Pool:<br><br>(i) The risk includes coverages on a motor vehicle with respect to which one or more household members is a driver with less than six years of licensed driving experience and having had no Accidents and no Convictions arising from events occurring during such period;<br><br>(ii) The vehicle is used in whole or in part as a Private Passenger Vehicle, provided that where such vehicle has a non-Private Passenger Vehicle use in addition to a Private Passenger Vehicle use only the coverage with respect to the Private Passenger | **3. (a)** The following are the requirements for a risk to be eligible for transfer to the *Nova Scotia Pool:*<br><br>*(i) The vehicle is used in whole or in part as a Private Passenger Vehicle, provided that where such vehicle has a non-Private Passenger Vehicle use in addition to a Private Passenger Vehicle use only the coverage with respect to the Private Passenger Vehicle use is eligible for transfer and in the event that such transfer results in liability arising from a non-private passenger use of the vehicle that liability will be that of the transferring member and not of the Nova Scotia Pool; and* | Remove subsection (i) and the portion of subsection (iii) which limits RSP to Inexperienced drivers, add new subsection (iv) requiring risks to be appropriately rated and classified. |

| Article | Section / Current Version (As at July 1 2020) | Proposed Amendment | Reason for Change |
|---|---|---|---|
| **Article XI.4 Nova Scotia Section 3 (a)** ***cont'd*** | Vehicle use is eligible for transfer and in the event that such transfer results in liability arising from a non-private passenger use of the vehicle that liability will be that of the transferring member and not of the Nova Scotia Pool;<br><br>(iii) The member has obtained the appropriate classification and rate procedures and has requested previous insurer reports and drivers record abstracts in order to verify that the conditions set out in (i) apply;<br><br>(iv) The risk is insured against Third Party Liability for at least the statutory limit,<br><br>(v) The premiums charged by the member to the insured for those parts of the insurance transferred to the Nova Scotia Pool are in accordance with its approved premiums for such risk. | *(ii) The member has followed all appropriate classification and rate procedures and has requested previous-insurer report(s) and driver record abstract(s); and*<br><br>*(iii) The risk is insured against Third Party Liability for at least the statutory limit; and*<br><br>*(iv) The premiums charged by the member to the insured for those parts of the insurance that are transferable to the Nova Scotia Pool are in accordance with its approved premiums for such risk* | |
| **Article XI.4 Nova Scotia RSP** ***New Section*** | No mention of transfer limit | *13. A member may not in a calendar year in which the Nova Scotia Pool is operating, transfer to the Nova Scotia Pool any eligible risk where such transfer would constitute a transfer by it in such calendar year of voluntary private passenger non-fleet, third party direct written car years in excess of the number of such car years equal to a percentage as set by the Board by resolution from time to time of the number of its total voluntary private passenger non-fleet third party liability direct written car years for such jurisdiction in the immediately preceding calendar year provided that:*<br><br>*(a) any purported transfer in contravention of such restriction shall be ineffective and the risk shall remain solely for the account of the member purporting to effect the transfer unless authorized as hereinafter set out;* | Add a section 13 equivalent to that in RSPs of New Brunswick, Alberta and Newfoundland and Labrador which allows for a limit to be set in Nova Scotia RSP (under the Inexperienced Driver Pool there was none) |

| Article | Section / Current Version (As at July 1 2020) | Proposed Amendment | Reason for Change |
|---|---|---|---|
| **Article XI.4 Nova Scotia RSP** ***New Section*** *cont'd* | | *(b) a member may apply to the Board for approval of transfers in excess of such limit. Such approval may be given retroactively and in such form as the Board deems advisable.* | |
| **Article XXI Plan of Operation and Rules of Operation** | 3. The Rules shall consist of:<br>(a) Accounting and Statistical Manual<br>(b) Manual of Rules and Rates<br>(c) Facility Association Residual Market Claims Guide<br>(d) Ontario Risk Sharing Pool Claims Guide<br>(e) Alberta Risk Sharing Pool Claims Guide<br>(f) New Brunswick Risk Sharing Pool Claims Guide<br>(g) Nova Scotia Risk Sharing Pool Claims Guide<br>(h) Ontario Risk Sharing Pool Procedures Manual<br>(i) Alberta Risk Sharing Pool Procedures Manual<br>(j) New Brunswick Risk Sharing Pool Procedures Manual<br>(k) Nova Scotia Risk Sharing Pool Procedures Manual<br>(l) Alberta Supplementary Market Availability Plan Manual<br>(m) Underwriting Information Plan Manual<br>(n) such additional manuals, forms and procedures adopted and approved in accordance with the Plan. | 3. The Rules shall consist of:<br>*(a)* Accounting and Statistical Manual<br>*(b)* Manual of Rules and Rates<br>*(c)* Facility Association Residual Market Claims Guide<br>*(d)* Ontario Risk Sharing Pool Claims Guide<br>*(e)* Alberta Risk Sharing Pool Claims Guide<br>*(f)* New Brunswick Risk Sharing Pool Claims Guide<br>*(g)* Nova Scotia Risk Sharing Pool Claims Guide<br>*(h) Newfoundland and Labrador Risk Sharing Pool Claims Guide*<br>*(i)* Ontario Risk Sharing Pool Procedures Manual<br>*(j)* Alberta Risk Sharing Pool Procedures Manual<br>*(k)* New Brunswick Risk Sharing Pool Procedures Manual<br>*(l)* Nova Scotia Risk Sharing Pool Procedures Manual<br>*(m) Newfoundland and Labrador Risk Sharing Pool Procedures Manual*<br>*(n)* Alberta Supplementary Market Availability Plan Manual<br>*(o)* Underwriting Information Plan Manual<br>*(p)* such additional manuals, forms and procedures adopted and approved in accordance with the Plan. | Administrative - include NL RSP manuals in the list. |

# BALLOT

**_____ as a member of the Facility Association hereby,**
**Company name**

**pursuant to Article XX section 2 of the Plan of Operation of Facility Association;**

**approves and consents to** O **disapproves of and opposes** O

**The proposed amendments to the Plan of Operation of Facility Association is set out in the attachment to Bulletin F2020-050.**

**Dated the_____day of_____2020**

**Signature:** _____
**Name**

**Per:** _____

**Title:** _____

**Please sign and return the Ballot to the attention of Tina Cheung by August 27, 2020**
**either by fax 416-842-0241 or email tcheung@facilityassociation.com**

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: all jurisdiction*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| **11** | ***AIG Canada Group*** |
| | AIG Insurance Company of Canada |
| **26** | ***Alberta Motor Association Insurance Company*** |
| | Alberta Motor Association Insurance Company |
| **1** | ***Allianz Global Risk US - Group*** |
| | Allianz Global Risks US Insurance Company |
| **190** | ***Allstate Canada Group*** |
| | Esurance Insurance Company of Canada (EICC) |
| | Pembridge Insurance Company |
| | Pafco Insurance Company |
| | Allstate Insurance Company of Canada |
| **1** | ***Arch Insurance Company*** |
| | Arch Insurance Canada Ltd. |
| **347** | ***Aviva Canada Inc Group*** |
| | Aviva General Insurance Company |
| | Aviva Insurance Company of Canada |
| | S&Y Insurance Company |
| | Traders General Insurance Company |
| | Scottish & York Insurance Co. Limited |
| | Elite Insurance Company |
| **40** | ***CAA Insurance Company Group*** |
| | CAA Insurance Company |
| **3** | ***Cherokee Insurance Company*** |
| | Cherokee Insurance Company |
| **18** | ***Chubb Group*** |
| | Federal Insurance Company |
| | ACE INA Insurance |
| **5** | ***CNA Financial Corporation*** |
| | Continental Casualty Company |
| **221** | ***Co-operators Group*** |
| | Co-operators General Insurance Company |
| | The Sovereign General Insurance Company |
| | Cumis General Insurance Company |
| | Coseco Insurance Company |
| **12** | ***Commonwell Mutual Insurance Group*** |
| | The Commonwell Mutual Insurance Group |
| **415** | ***Desjardins General Insurance Group Inc.*** |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: all jurisdiction*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| | Certas Home and Auto Insurance Company |
| | Certas Home and Auto Insurance Company |
| | Certas Direct Insurance Company |
| | The Personal Insurance Company |
| **41** | ***Echelon Insurance*** |
| | Echelon Insurance |
| **186** | ***Economical Mutual Group*** |
| | Economical Mutual Insurance Company |
| | Sonnet Insurance Company |
| | The Missisquoi Insurance Company |
| | Perth Insurance Company |
| | Waterloo Insurance Company |
| **1** | ***Electric Insurance Company*** |
| | Electric Insurance Company |
| **1** | ***Everest Insurance Company of CDA*** |
| | Everest Insurance Company of Canada |
| | ***Farmers Mutual Reinsurance Plan*** |
| **1** | 01-Algoma Mutual Insurance Company |
| **3** | 03-Ayr Farmers Mutual Insurance Company |
| **2** | 05-Bertie & Clinton Mutual Insurance Com |
| **1** | 07-Brant Mutual Insurance Company |
| **1** | 09-Cayuga Mutual Insurance Company |
| **1** | 12-Dufferin Mutual Insurance Company |
| **2** | 13-Dumfries Mutual Insurance Company |
| **2** | 14-West Elgin Mutual Insurance Company |
| **1** | 18-Erie Mutual Fire Insurance Company |
| **2** | 21-Germania Mutual Insurance Company |
| **2** | 23-Grenville Mutual Insurance Company |
| **2** | 25-Halwell Mutual Insurance Company |
| **2** | 26-HTM Insurance Company |
| **1** | 27-Hay Mutual Insurance Company |
| **1** | 28-Howard Mutual Insurance Company |
| **1** | 29-Howick Mutual Insurance Company |
| **3** | 30-Kent & Essex Mutual Insurance Company |
| **2** | 31-Lambton Mutual Insurance Company |
| **1** | 33-L & A Mutual Insurance Company |
| **1** | 37-McKillop Mutual Insurance Company |
| **2** | 38-Nova Mutual Insurance Company |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: all jurisdiction*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| **1** | 39-North Blenheim Mutual Insurance Compa |
| **1** | 40-The North Kent Mutual Fire Insurance |
| **5** | 43-Peel Mutual Insurance Company |
| **2** | 44-Edge Mutual Insurance Company |
| **2** | 46-South Easthope Mutual Insurance Compa |
| **1** | 48-Caradoc Townsend Mutual Insurance Com |
| **1** | 49-Usborne & Hibbert Mutual Fire Insuran |
| **1** | 50-Nova Mutual Insurance Company |
| **1** | 51-Westminster Mutual Insurance Company |
| **1** | 52-West Wawanosh Mutual Insurance Compan |
| **2** | 53-Yarmouth Mutual Insurance Company |
| **1** | 54-Middlesex Mutual Insurance Company |
| **2** | 55-Town & Country Mutual Insurance Compa |
| **2** | 56-Tradition Mutual Insurance Company |
| **3** | 57-Trillium Mutual Insurance Company |
| **1** | ***Fortress Insurance Company*** |
| | Fortress Insurance Company |
| **31** | ***Gore Mutual Insurance Company*** |
| | Gore Mutual Insurance Company |
| **1** | ***Groupe Promutuel Federation de societes*** |
| | Promutuel de l'Estuaire societe mutuelle d'assura |
| **1** | ***Hartford Fire Insurance Company*** |
| | Hartford Fire Insurance Company |
| **0** | ***HDI Global Specialty SE*** |
| | HDI Global Specialty SE |
| **7** | ***Heartland Farm Mutual Group*** |
| | Heartland Farm Mutual Inc. |
| **3** | ***Insurance Company of Prince Edward Island Group*** |
| | Insurance Company of Prince Edward Island |
| **523** | ***Intact Group*** |
| | Novex Insurance Company |
| | Intact Insurance Company |
| | Intact Insurance Company |
| | belairdirect/The Nordic Insurance Company |
| | Intact Insurance Company |
| | Belair Insurance Inc. |
| | Novex Insurance Company |
| | The Guarantee Company of North America |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: all jurisdiction*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| | Trafalgar Insurance Company of Canada |
| | Jevco Insurance Company |
| **15** | ***La Capitale General Insurance*** |
| | Unica Insurance Inc. / Unica Assurances Inc. |
| **4** | ***Liberty Mutual Insurance Company*** |
| | Liberty Mutual Insurance Company |
| **5** | ***Lloyds Underwriters*** |
| | Lloyd's Underwriters |
| **5** | ***Millennium Insurance Group*** |
| | Millennium Insurance Corporation |
| **1** | ***Mitsui Sumitomo Insurance*** |
| | Mitsui Sumitomo Insurance Company Limited |
| **87** | ***Northbridge Financial Corporation*** |
| | Federated Insurance Company of Canada |
| | Zenith Insurance Company |
| | Verassure Insurance Company |
| | Northbridge Personal Insurance Corporation |
| | Northbridge General Insurance Corporation |
| **14** | ***Old Republic Insurance Company of Canada*** |
| | Old Republic Insurance Company of Canada |
| **5** | ***Optimum Insurance Group*** |
| | Optimum West Insurance Company Inc. |
| | Optimum Insurance Company Inc. |
| **11** | ***Peace Hills General Insurance Company*** |
| | Peace Hills General Insurance Company |
| **10** | ***Portage la Prairie Mutual Ins*** |
| | Portage la Prairie Mutual Insurance Company (The) |
| **1** | ***Protective Insurance Company*** |
| | Protective Insurance Company |
| **165** | ***RSA Group*** |
| | Western Assurance Company |
| | Canadian Northern Shield Insurance Company |
| | Royal & Sun Alliance Insurance Company of Canada |
| | Unifund Assurance Company |
| **1** | ***Saskatchewan Mutual Insurance Company*** |
| | Saskatchewan Mutual Insurance Company |
| **1** | ***Sentry Insurance a Mutual Company*** |
| | Sentry Insurance a Mutual Company |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: all jurisdiction*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| **27** | ***SGI Canada Insurance Services Ltd.*** |
| | SGI Canada Insurance Services Limited |
| | Coachman Insurance Company |
| **1** | ***Starr Insurance and Reinsurance Limited*** |
| | Starr Insurance and Reinsurance Limited |
| **326** | ***TD Insurance Group*** |
| | TD Home and Auto Insurance Company |
| | TD General Insurance Company |
| | Security National Insurance Company |
| | Primmum Insurance Company |
| **2** | ***Technology Insurance Company*** |
| | Technology Insurance Company Inc |
| **2** | ***Tokio Marine & Nichido Fire Insurance*** |
| | Tokio Marine & Nichido Fire Insurance Co. Ltd. |
| **120** | ***Travelers Insurance Companies Inc.*** |
| | The Dominion of Canada General Insurance Company |
| | Chieftain Insurance |
| | St. Paul Fire and Marine Insurance Company |
| | Travelers Insurance Company of Canada |
| **1** | ***United General Insurance Corporation*** |
| | United General Insurance Corporation |
| **179** | ***Wawanesa Mutual Insurance Company*** |
| | The Wawanesa Mutual Insurance Company |
| **1** | ***XL Speciality Insurance Company*** |
| | XL Specialty Insurance Company |
| **12** | ***Zurich Insurance Company Ltd*** |
| | Zurich Insurance Company |
| **3142** | |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: Ontario*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| 9 | ***AIG Canada Group*** |
| | AIG Insurance Company of Canada |
| 1 | ***Allianz Global Risk US - Group*** |
| | Allianz Global Risks US Insurance Company |
| 153 | ***Allstate Canada Group*** |
| | Esurance Insurance Company of Canada (EICC) |
| | Pembridge Insurance Company |
| | Pafco Insurance Company |
| | Allstate Insurance Company of Canada |
| 1 | ***Arch Insurance Company*** |
| | Arch Insurance Canada Ltd. |
| 279 | ***Aviva Canada Inc Group*** |
| | Aviva General Insurance Company |
| | Aviva Insurance Company of Canada |
| | S&Y Insurance Company |
| | Traders General Insurance Company |
| | Scottish & York Insurance Co. Limited |
| | Elite Insurance Company |
| 38 | ***CAA Insurance Company Group*** |
| | CAA Insurance Company |
| 3 | ***Cherokee Insurance Company*** |
| | Cherokee Insurance Company |
| 14 | ***Chubb Group*** |
| | Federal Insurance Company |
| | ACE INA Insurance |
| 3 | ***CNA Financial Corporation*** |
| | Continental Casualty Company |
| 158 | ***Co-operators Group*** |
| | Co-operators General Insurance Company |
| | The Sovereign General Insurance Company |
| | Cumis General Insurance Company |
| | Coseco Insurance Company |
| 12 | ***Commonwell Mutual Insurance Group*** |
| | The Commonwell Mutual Insurance Group |
| 359 | ***Desjardins General Insurance Group Inc.*** |
| | Certas Home and Auto Insurance Company |
| | Certas Home and Auto Insurance Company |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: Ontario*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| | Certas Direct Insurance Company |
| | The Personal Insurance Company |
| **36** | ***Echelon Insurance*** |
| | Echelon Insurance |
| **151** | ***Economical Mutual Group*** |
| | Economical Mutual Insurance Company |
| | Sonnet Insurance Company |
| | The Missisquoi Insurance Company |
| | Perth Insurance Company |
| | Waterloo Insurance Company |
| **1** | ***Electric Insurance Company*** |
| | Electric Insurance Company |
| **1** | ***Everest Insurance Company of CDA*** |
| | Everest Insurance Company of Canada |
| | ***Farmers Mutual Reinsurance Plan*** |
| **1** | 01-Algoma Mutual Insurance Company |
| **3** | 03-Ayr Farmers Mutual Insurance Company |
| **2** | 05-Bertie & Clinton Mutual Insurance Com |
| **1** | 07-Brant Mutual Insurance Company |
| **1** | 09-Cayuga Mutual Insurance Company |
| **1** | 12-Dufferin Mutual Insurance Company |
| **2** | 13-Dumfries Mutual Insurance Company |
| **2** | 14-West Elgin Mutual Insurance Company |
| **1** | 18-Erie Mutual Fire Insurance Company |
| **2** | 21-Germania Mutual Insurance Company |
| **2** | 23-Grenville Mutual Insurance Company |
| **2** | 25-Halwell Mutual Insurance Company |
| **2** | 26-HTM Insurance Company |
| **1** | 27-Hay Mutual Insurance Company |
| **1** | 28-Howard Mutual Insurance Company |
| **1** | 29-Howick Mutual Insurance Company |
| **3** | 30-Kent & Essex Mutual Insurance Company |
| **2** | 31-Lambton Mutual Insurance Company |
| **1** | 33-L & A Mutual Insurance Company |
| **1** | 37-McKillop Mutual Insurance Company |
| **2** | 38-Nova Mutual Insurance Company |
| **1** | 39-North Blenheim Mutual Insurance Compa |
| **1** | 40-The North Kent Mutual Fire Insurance |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: Ontario*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| 5 | 43-Peel Mutual Insurance Company |
| 2 | 44-Edge Mutual Insurance Company |
| 2 | 46-South Easthope Mutual Insurance Compa |
| 1 | 48-Caradoc Townsend Mutual Insurance Com |
| 1 | 49-Usborne & Hibbert Mutual Fire Insuran |
| 1 | 50-Nova Mutual Insurance Company |
| 1 | 51-Westminster Mutual Insurance Company |
| 1 | 52-West Wawanosh Mutual Insurance Compan |
| 2 | 53-Yarmouth Mutual Insurance Company |
| 1 | 54-Middlesex Mutual Insurance Company |
| 2 | 55-Town & Country Mutual Insurance Compa |
| 2 | 56-Tradition Mutual Insurance Company |
| 3 | 57-Trillium Mutual Insurance Company |
| 31 | ***Gore Mutual Insurance Company*** |
| | Gore Mutual Insurance Company |
| 1 | ***Hartford Fire Insurance Company*** |
| | Hartford Fire Insurance Company |
| 0 | ***HDI Global Specialty SE*** |
| | HDI Global Specialty SE |
| 7 | ***Heartland Farm Mutual Group*** |
| | Heartland Farm Mutual Inc. |
| 375 | ***Intact Group*** |
| | Novex Insurance Company |
| | Intact Insurance Company |
| | Intact Insurance Company |
| | belairdirect/The Nordic Insurance Company |
| | Intact Insurance Company |
| | Belair Insurance Inc. |
| | The Guarantee Company of North America |
| | Jevco Insurance Company |
| 15 | ***La Capitale General Insurance*** |
| | Unica Insurance Inc. / Unica Assurances Inc. |
| 2 | ***Liberty Mutual Insurance Company*** |
| | Liberty Mutual Insurance Company |
| 3 | ***Lloyds Underwriters*** |
| | Lloyd's Underwriters |
| 1 | ***Mitsui Sumitomo Insurance*** |
| | Mitsui Sumitomo Insurance Company Limited |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: Ontario*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| **68** | ***Northbridge Financial Corporation*** |
| | Federated Insurance Company of Canada |
| | Zenith Insurance Company |
| | Verassure Insurance Company |
| | Northbridge Personal Insurance Corporation |
| | Northbridge General Insurance Corporation |
| **13** | ***Old Republic Insurance Company of Canada*** |
| | Old Republic Insurance Company of Canada |
| **4** | ***Optimum Insurance Group*** |
| | Optimum Insurance Company Inc. |
| **4** | ***Portage la Prairie Mutual Ins*** |
| | Portage la Prairie Mutual Insurance Company (The) |
| **1** | ***Protective Insurance Company*** |
| | Protective Insurance Company |
| **114** | ***RSA Group*** |
| | Western Assurance Company |
| | Canadian Northern Shield Insurance Company |
| | Royal & Sun Alliance Insurance Company of Canada |
| | Unifund Assurance Company |
| **1** | ***Sentry Insurance a Mutual Company*** |
| | Sentry Insurance a Mutual Company |
| **15** | ***SGI Canada Insurance Services Ltd.*** |
| | SGI Canada Insurance Services Limited |
| | Coachman Insurance Company |
| **1** | ***Starr Insurance and Reinsurance Limited*** |
| | Starr Insurance and Reinsurance Limited |
| **209** | ***TD Insurance Group*** |
| | TD General Insurance Company |
| | Security National Insurance Company |
| | Primmum Insurance Company |
| **2** | ***Technology Insurance Company*** |
| | Technology Insurance Company Inc |
| **2** | ***Tokio Marine & Nichido Fire Insurance*** |
| | Tokio Marine & Nichido Fire Insurance Co. Ltd. |
| **98** | ***Travelers Insurance Companies Inc.*** |
| | The Dominion of Canada General Insurance Company |
| | Chieftain Insurance |
| | St. Paul Fire and Marine Insurance Company |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: Ontario*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| | Travelers Insurance Company of Canada |
| **87** | ***Wawanesa Mutual Insurance Company*** |
| | The Wawanesa Mutual Insurance Company |
| **1** | ***XL Speciality Insurance Company*** |
| | XL Specialty Insurance Company |
| **8** | ***Zurich Insurance Company Ltd*** |
| | Zurich Insurance Company |
| **2342** | |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: Alberta*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| 2 | ***AIG Canada Group*** |
| | AIG Insurance Company of Canada |
| 26 | ***Alberta Motor Association Insurance Company*** |
| | Alberta Motor Association Insurance Company |
| 1 | ***Allianz Global Risk US - Group*** |
| | Allianz Global Risks US Insurance Company |
| 24 | ***Allstate Canada Group*** |
| | Esurance Insurance Company of Canada (EICC) |
| | Pembridge Insurance Company |
| | Allstate Insurance Company of Canada |
| 1 | ***Arch Insurance Company*** |
| | Arch Insurance Canada Ltd. |
| 40 | ***Aviva Canada Inc Group*** |
| | Aviva General Insurance Company |
| | Aviva Insurance Company of Canada |
| | S&Y Insurance Company |
| | Traders General Insurance Company |
| | Elite Insurance Company |
| 4 | ***Chubb Group*** |
| | Federal Insurance Company |
| | ACE INA Insurance |
| 2 | ***CNA Financial Corporation*** |
| | Continental Casualty Company |
| 45 | ***Co-operators Group*** |
| | Co-operators General Insurance Company |
| | The Sovereign General Insurance Company |
| | Cumis General Insurance Company |
| | Coseco Insurance Company |
| 47 | ***Desjardins General Insurance Group Inc.*** |
| | Certas Home and Auto Insurance Company |
| | Certas Home and Auto Insurance Company |
| | Certas Direct Insurance Company |
| | The Personal Insurance Company |
| 1 | ***Echelon Insurance*** |
| | Echelon Insurance |
| 22 | ***Economical Mutual Group*** |
| | Economical Mutual Insurance Company |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: Alberta*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| | Sonnet Insurance Company |
| | The Missisquoi Insurance Company |
| | Waterloo Insurance Company |
| **1** | ***Electric Insurance Company*** |
| | Electric Insurance Company |
| **1** | ***Everest Insurance Company of CDA*** |
| | Everest Insurance Company of Canada |
| **1** | ***Fortress Insurance Company*** |
| | Fortress Insurance Company |
| **1** | ***Gore Mutual Insurance Company*** |
| | Gore Mutual Insurance Company |
| **1** | ***Hartford Fire Insurance Company*** |
| | Hartford Fire Insurance Company |
| **114** | ***Intact Group*** |
| | Novex Insurance Company |
| | Intact Insurance Company |
| | Intact Insurance Company |
| | Intact Insurance Company |
| | Belair Insurance Inc. |
| | The Guarantee Company of North America |
| **2** | ***Liberty Mutual Insurance Company*** |
| | Liberty Mutual Insurance Company |
| **1** | ***Lloyds Underwriters*** |
| | Lloyd's Underwriters |
| **5** | ***Millennium Insurance Group*** |
| | Millennium Insurance Corporation |
| **1** | ***Mitsui Sumitomo Insurance*** |
| | Mitsui Sumitomo Insurance Company Limited |
| **15** | ***Northbridge Financial Corporation*** |
| | Federated Insurance Company of Canada |
| | Zenith Insurance Company |
| | Northbridge Personal Insurance Corporation |
| | Northbridge General Insurance Corporation |
| **2** | ***Old Republic Insurance Company of Canada*** |
| | Old Republic Insurance Company of Canada |
| **2** | ***Optimum Insurance Group*** |
| | Optimum West Insurance Company Inc. |
| **11** | ***Peace Hills General Insurance Company*** |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: Alberta*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| | Peace Hills General Insurance Company |
| **3** | ***Portage la Prairie Mutual Ins*** |
| | Portage la Prairie Mutual Insurance Company (The) |
| **1** | ***Protective Insurance Company*** |
| | Protective Insurance Company |
| **28** | ***RSA Group*** |
| | Canadian Northern Shield Insurance Company |
| | Royal & Sun Alliance Insurance Company of Canada |
| | Unifund Assurance Company |
| **1** | ***Saskatchewan Mutual Insurance Company*** |
| | Saskatchewan Mutual Insurance Company |
| **1** | ***Sentry Insurance  a Mutual Company*** |
| | Sentry Insurance a Mutual Company |
| **12** | ***SGI Canada Insurance Services Ltd.*** |
| | SGI Canada Insurance Services Limited |
| **1** | ***Starr Insurance and Reinsurance Limited*** |
| | Starr Insurance and Reinsurance Limited |
| **86** | ***TD Insurance Group*** |
| | TD Home and Auto Insurance Company |
| | Security National Insurance Company |
| | Primmum Insurance Company |
| **1** | ***Tokio Marine & Nichido Fire Insurance*** |
| | Tokio Marine & Nichido Fire Insurance Co. Ltd. |
| **15** | ***Travelers Insurance Companies Inc.*** |
| | The Dominion of Canada General Insurance Company |
| | St. Paul Fire and Marine Insurance Company |
| | Travelers Insurance Company of Canada |
| **74** | ***Wawanesa Mutual Insurance Company*** |
| | The Wawanesa Mutual Insurance Company |
| **1** | ***XL Speciality Insurance Company*** |
| | XL Specialty Insurance Company |
| **3** | ***Zurich Insurance Company Ltd*** |
| | Zurich Insurance Company |
| **600** | |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: New Brunswick*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| 1 | ***AIG Canada Group*** |
| | AIG Insurance Company of Canada |
| 1 | ***Allianz Global Risk US - Group*** |
| | Allianz Global Risks US Insurance Company |
| 7 | ***Allstate Canada Group*** |
| | Pembridge Insurance Company |
| | Pafco Insurance Company |
| | Allstate Insurance Company of Canada |
| 0 | ***Arch Insurance Company*** |
| | Arch Insurance Canada Ltd. |
| 7 | ***Aviva Canada Inc Group*** |
| | Aviva General Insurance Company |
| | Aviva Insurance Company of Canada |
| | Traders General Insurance Company |
| | Elite Insurance Company |
| 1 | ***CAA Insurance Company Group*** |
| | CAA Insurance Company |
| 1 | ***Chubb Group*** |
| | Federal Insurance Company |
| | ACE INA Insurance |
| 1 | ***CNA Financial Corporation*** |
| | Continental Casualty Company |
| 5 | ***Co-operators Group*** |
| | Co-operators General Insurance Company |
| | The Sovereign General Insurance Company |
| | Cumis General Insurance Company |
| | Coseco Insurance Company |
| 6 | ***Desjardins General Insurance Group Inc.*** |
| | Certas Home and Auto Insurance Company |
| | The Personal Insurance Company |
| 2 | ***Echelon Insurance*** |
| | Echelon Insurance |
| 7 | ***Economical Mutual Group*** |
| | Economical Mutual Insurance Company |
| | Sonnet Insurance Company |
| | The Missisquoi Insurance Company |
| | Perth Insurance Company |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: New Brunswick*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| | Waterloo Insurance Company |
| 1 | ***Electric Insurance Company*** |
| | Electric Insurance Company |
| 0 | ***Everest Insurance Company of CDA*** |
| | Everest Insurance Company of Canada |
| 1 | ***Gore Mutual Insurance Company*** |
| | Gore Mutual Insurance Company |
| 1 | ***Groupe Promutuel Federation de societes*** |
| | Promutuel de l'Estuaire societe mutuelle d'assura |
| 1 | ***Hartford Fire Insurance Company*** |
| | Hartford Fire Insurance Company |
| 1 | ***Insurance Company of Prince Edward Island Group*** |
| | Insurance Company of Prince Edward Island |
| 7 | ***Intact Group*** |
| | Intact Insurance Company |
| | Intact Insurance Company |
| | Intact Insurance Company |
| | The Guarantee Company of North America |
| | Trafalgar Insurance Company of Canada |
| 1 | ***Liberty Mutual Insurance Company*** |
| | Liberty Mutual Insurance Company |
| 1 | ***Lloyds Underwriters*** |
| | Lloyd's Underwriters |
| 1 | ***Mitsui Sumitomo Insurance*** |
| | Mitsui Sumitomo Insurance Company Limited |
| 3 | ***Northbridge Financial Corporation*** |
| | Federated Insurance Company of Canada |
| | Zenith Insurance Company |
| | Northbridge Personal Insurance Corporation |
| | Northbridge General Insurance Corporation |
| 1 | ***Old Republic Insurance Company of Canada*** |
| | Old Republic Insurance Company of Canada |
| 1 | ***Portage la Prairie Mutual Ins*** |
| | Portage la Prairie Mutual Insurance Company (The) |
| 1 | ***Protective Insurance Company*** |
| | Protective Insurance Company |
| 5 | ***RSA Group*** |
| | Royal & Sun Alliance Insurance Company of Canada |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: New Brunswick*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| | Unifund Assurance Company |
| 1 | ***Sentry Insurance a Mutual Company*** |
| | Sentry Insurance a Mutual Company |
| 9 | ***TD Insurance Group*** |
| | TD Home and Auto Insurance Company |
| | Security National Insurance Company |
| | Primmum Insurance Company |
| 1 | ***Tokio Marine & Nichido Fire Insurance*** |
| | Tokio Marine & Nichido Fire Insurance Co. Ltd. |
| 2 | ***Travelers Insurance Companies Inc.*** |
| | The Dominion of Canada General Insurance Company |
| | St. Paul Fire and Marine Insurance Company |
| | Travelers Insurance Company of Canada |
| 1 | ***United General Insurance Corporation*** |
| | United General Insurance Corporation |
| 10 | ***Wawanesa Mutual Insurance Company*** |
| | The Wawanesa Mutual Insurance Company |
| 1 | ***XL Speciality Insurance Company*** |
| | XL Specialty Insurance Company |
| 1 | ***Zurich Insurance Company Ltd*** |
| | Zurich Insurance Company |
| **91** | |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: Nova Scotia*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| 1 | ***AIG Canada Group*** |
| | AIG Insurance Company of Canada |
| 1 | ***Allianz Global Risk US - Group*** |
| | Allianz Global Risks US Insurance Company |
| 7 | ***Allstate Canada Group*** |
| | Pembridge Insurance Company |
| | Pafco Insurance Company |
| | Allstate Insurance Company of Canada |
| 1 | ***Arch Insurance Company*** |
| | Arch Insurance Canada Ltd. |
| 10 | ***Aviva Canada Inc Group*** |
| | Aviva General Insurance Company |
| | Aviva Insurance Company of Canada |
| | Traders General Insurance Company |
| | Elite Insurance Company |
| 1 | ***CAA Insurance Company Group*** |
| | CAA Insurance Company |
| 1 | ***Chubb Group*** |
| | Federal Insurance Company |
| | ACE INA Insurance |
| 1 | ***CNA Financial Corporation*** |
| | Continental Casualty Company |
| 5 | ***Co-operators Group*** |
| | Co-operators General Insurance Company |
| | The Sovereign General Insurance Company |
| | Cumis General Insurance Company |
| | Coseco Insurance Company |
| 3 | ***Desjardins General Insurance Group Inc.*** |
| | The Personal Insurance Company |
| 3 | ***Echelon Insurance*** |
| | Echelon Insurance |
| 7 | ***Economical Mutual Group*** |
| | Economical Mutual Insurance Company |
| | Sonnet Insurance Company |
| | The Missisquoi Insurance Company |
| | Perth Insurance Company |
| | Waterloo Insurance Company |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: Nova Scotia*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| 1 | ***Electric Insurance Company*** |
| | Electric Insurance Company |
| 0 | ***Everest Insurance Company of CDA*** |
| | Everest Insurance Company of Canada |
| 1 | ***Gore Mutual Insurance Company*** |
| | Gore Mutual Insurance Company |
| 1 | ***Hartford Fire Insurance Company*** |
| | Hartford Fire Insurance Company |
| 2 | ***Insurance Company of Prince Edward Island Group*** |
| | Insurance Company of Prince Edward Island |
| 13 | ***Intact Group*** |
| | Novex Insurance Company |
| | Intact Insurance Company |
| | Intact Insurance Company |
| | Intact Insurance Company |
| | The Guarantee Company of North America |
| | Trafalgar Insurance Company of Canada |
| 1 | ***Liberty Mutual Insurance Company*** |
| | Liberty Mutual Insurance Company |
| 1 | ***Lloyds Underwriters*** |
| | Lloyd's Underwriters |
| 1 | ***Mitsui Sumitomo Insurance*** |
| | Mitsui Sumitomo Insurance Company Limited |
| 2 | ***Northbridge Financial Corporation*** |
| | Federated Insurance Company of Canada |
| | Zenith Insurance Company |
| | Northbridge Personal Insurance Corporation |
| | Northbridge General Insurance Corporation |
| 2 | ***Portage la Prairie Mutual Ins*** |
| | Portage la Prairie Mutual Insurance Company (The) |
| 1 | ***Protective Insurance Company*** |
| | Protective Insurance Company |
| 8 | ***RSA Group*** |
| | Royal & Sun Alliance Insurance Company of Canada |
| | Unifund Assurance Company |
| 1 | ***Sentry Insurance a Mutual Company*** |
| | Sentry Insurance a Mutual Company |
| 16 | ***TD Insurance Group*** |

Facility Association Residual Market
Voting Rights Report

*Jurisdiction: Nova Scotia*
*Source: total volume of voluntary automobile direct written premium in 2019*

| Votes | Company |
|---|---|
| | TD Home and Auto Insurance Company |
| | Security National Insurance Company |
| | Primmum Insurance Company |
| **1** | ***Tokio Marine & Nichido Fire Insurance*** |
| | Tokio Marine & Nichido Fire Insurance Co. Ltd. |
| **4** | ***Travelers Insurance Companies Inc.*** |
| | The Dominion of Canada General Insurance Company |
| | St. Paul Fire and Marine Insurance Company |
| | Travelers Insurance Company of Canada |
| **8** | ***Wawanesa Mutual Insurance Company*** |
| | The Wawanesa Mutual Insurance Company |
| **1** | ***XL Speciality Insurance Company*** |
| | XL Specialty Insurance Company |
| **1** | ***Zurich Insurance Company Ltd*** |
| | Zurich Insurance Company |
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# *Rating Agencies*

*(S. Feldblum, 3 Oct 2011)*

## *Introduction*

Rating agencies provide two types of ratings: credit ratings for corporate, municipal, and government bonds and financial strength ratings for life and property-casualty insurers. Credit ratings for bonds are the primary work for Standard and Poor's, Moody's, and Fitch; insurance ratings are primary for A. M. Best's. This syllabus reading focuses on insurance ratings, though it provides background information for credit ratings as well.

Bond ratings make securities markets more efficient by reducing information costs for investors and creditors. Securities underwriters and bond buyers expect issuers of bonds to obtain ratings from one or more agencies. A poor initial rating raises the yield needed to sell the bond, and a ratings downgrade may lower a bond's market value.[1] If the debt is held by a bank (not publicly issued), the debt may be recalled if its rating falls below investment grade status. The firm issuing the debt may be forced to sell assets or cease operations.

Similarly, financial strength ratings make insurance markets more efficient by reducing information costs for agents and policyholders. These ratings are particularly important for insurers, assessing their ability to meet their claims obligations. Reinsurers may need investment grade ratings to retain consumers; independent agents use ratings to place policies with higher rated insurers. Ratings have entered even into regulatory and legal arenas. The Securities and Exchange Commission designated Moody's, S&P, and Fitch as *Nationally Recognized Statistical Rating Organizations* who can provide ratings for certain securities regulations; other agencies have since been added. The NAIC Statement of Actuarial Opinion requires the Appointed Actuary to consider the ratings of reinsurers when evaluating uncollectible reinsurance recoverables. Some Canadian courts require A ratings for insurers writing life annuities to fund structured settlements.[2] Some insurance departments require an insurer to have an A- or better rating to write surety business. Statutory accounting values bonds with ratings of BB (Ba) or lower at market value, not amortized value. Risk-based capital (RBC) bond charges depend on the bond class, which is based on ratings by Moody's and S&P.

Recent downgrades of highly rated debt, such as triple-A rated mortgage-backed securities in 2008-2009, and failures of some highly rated firms (Enron, Worldcom, AIG) have evoked criticism of rating agencies. A 2006 law now requires extensive disclosure of rating agencies methods, to help investors and creditors understand how agencies determine the ratings. The oligopolistic nature of the rating agency industry and the (perhaps) greater efficiency of free markets in determining bond yields has provoked questions about the use of ratings.

## *Structure of this Reading*

This reading is geared to candidates for the CAS exams. It focuses on financial strength ratings of property-casualty insurers, with background information about bond ratings in other industries. It presents alternative views on disputed issues, such as the structure of the rating agency market: do the agencies make insurance markets more efficient by providing information that is hard to obtain or do they mimic public information?

Section 1 explains how rating agencies help policyholders and agents by assessing the financial strength of insurers and their ability to pay claims years in the future. (Bond ratings affect coupon rates and issue prices; they are not the same as financial strength ratings.) Rating agencies can influence the capital structure, reinsurance arrangements, and business volume of their insurer clients.

Section 2 explains the ratings process: review of public data by ratings analysts, interactive meetings where insurers' managers portray themselves in favorable hues while providing hard data for the analyst's report, and decisions by the ratings committee. Rating agencies balance objective, quantitative data that is consistent across insurers and qualitative information that reflects unique attributes. The agencies combine research by ratings analysts with the experience of ratings committees.

Section 3 explains why ratings are vital for many property-casualty insurers: professional valuations of financial strength are efficient, many outside parties rely on the ratings, and few insurers are still unrated. High ratings are important requirements for reinsurance, surety, structured settlements, Homeowners, and some specialty lines. Many parties to insurance transactions, such as banks providing mortgages, property owners hiring building contractors, courts directing structured settlements, and clients of foreign reinsurers demand products from highly rated insurers.

Section 4 describes the meetings of ratings analysts with the insurer's senior managers. The topics discussed focus on qualitative information not available from public data: corporate form (holding companies, affiliates), capital structure (debt-to-equity ratios); information flow between executives and line personnel; strategic objectives (growth vs profitability; standard vs niche markets); financial goals (risk adjusted return on capital, economic value added); recent acquisitions and divestitures (business synergies; cost savings; integration of corporate cultures); competitive strategies for underwriting, pricing, and distribution systems (strengths and weaknesses vs peers; unique attributes of insurers); reinsurance arrangements and catastrophe exposures.

Section 5 examines salient attributes of rating agency capital standards: risk measures, stochastic models, and principles-based systems. Capital standards provide benchmarks for rating analysts and objective measures for insurers. They differentiate the agencies' methods, providing actuarial validation for the ratings and marketing tools to attract clients. They use up-to-date financial modeling: expected policyholder deficit and statistical distributions for risk measures, economic scenario generators for asset liability management, and discounted cash flow modes for reserving risk. Rating agency capital standards are now widely used for economic value added and return on risk adjusted capital, replacing the leverage ratios used previously.

Appendix A distinguishes financial strength ratings for insurers from debt ratings. A. M. Best's has the longest experience with insurer financial strength ratings; S&P, Moody's, and Fitch provide most debt ratings.

Appendix B covers the history and growth of the rating agencies. The advent of non-investment grade bonds in the late 1970's, the increase in sovereign debt since the early 1980's, and SEC rules led to rapid growth of the rating agencies in the past 30 years.

Appendix C reviews public perceptions of rating agencies: impartial judges of credit worthiness whose analysis of financial strength move markets or an oligopoly protected by barriers to entry paid by the firms they rate.

Appendix D provides exercises to help readers grasp the themes of this reading. The exercises give examples of the statements in the text of the reading.

## *SECTION 1: RATING AGENCIES PROVIDE MATERIAL BENEFITS TO INSURANCE POLICYHOLDERS*

Policyholders depend on the financial strength of insurers to fulfill long-term promises, but lack the expertise, resources, and time to examine insurers themselves. Rating agencies hire financial analysts, actuaries, and economists to assess the financial strength of insurers. Interactive meetings with senior insurance managers give them propriety information about operating strategy and competitive advantages. The willingness of insurers to pay for ratings and of agents and investors to base business decisions on these ratings testify to the public acceptance of the ratings. Firms pay handsomely to keep high ratings.[3] Insurers may spend $1 million a year (or more) on ratings, consisting of fees to rating agencies and internal costs to prepare for rating agency meetings.[4]

Some recent studies suggest that rating agencies do not respond as quickly as the bond and stock markets. Market traders immediately assess a firm's financial strength, whereas rating agency analysts may not respond for months. New information about a firm's operating performance leads to quick changes in stock values. In contrast, agency downgrades are slower; agencies prefer to wait until they verify their information.[5]

*Illustration:* An insurer with a $200 million market value has $800 million of bonds with average durations of six and a half years. If interest rates rise 200 basis points, the insurer's market value declines $100 million.

Investors bid down the insurer's stock price, but rating agencies may not downgrade the insurer for half a year. An insurer's investment portfolio is detailed in its Annual Statement, which is updated annually. The rating agency does not evaluate the insurer as quickly as investors do, and it may wait to downgrade the insurer to see if interest rates turn down.[6]

### *Section 2: Ratings Process Combines Quantitative Data with Qualitative Valuations*

Insurers are rated for their claims-paying ability, often to meet requirements of agents, banks, consumers, and courts. Unrated insurers can be at a disadvantage: independent agents hesitate to use them and some banks do not issue mortgages without property coverage from a rated insurer. Over 90% of insurers are rated by A. M. Best's or another agency, and Best's surveys are widely reviewed in the insurance industry. Insurers who do not pay for interactive ratings may receive public ratings, with less control over the information reviewed by the agencies and greater chance of errors.[7]

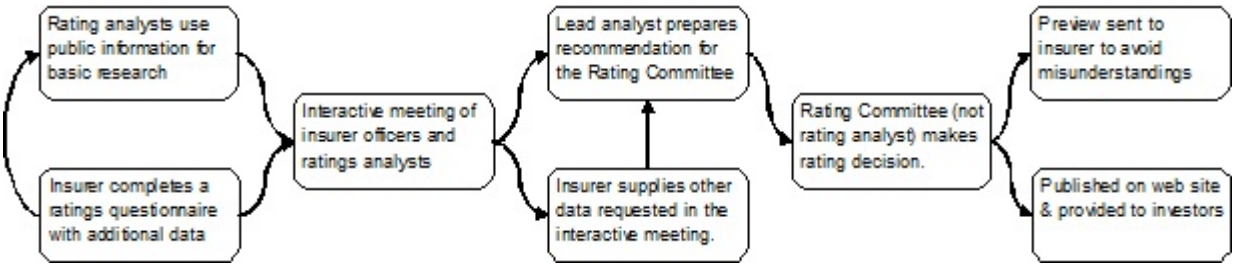
The ratings process is intrusive, time-consuming, and expensive. Ratings analysts meet with insurer officers responsible for underwriting, reserving, reinsurance, financial reporting, investments, risk management, and the insurer's major lines of business. The insurer's business strategy and internal management are clues to its resilience against adverse scenarios. The agencies focus on the quality of an insurer's managers and business strategy, They do not judge if a particular underwriting or investment decision was wise, as random fluctuations and market movements distort observed results. They focus on the insurer's managers: their knowledge of industry trends, their experience with adverse scenarios, and their handling of current problems.

Insurers decide the substance of their presentations, and they select the information they provide to agencies. Rating analysts may question the insurer's views, but they generally avoid specifying the data they want. They evaluate the integrity of their clients: deceptive, misleading, or incomplete information may lead to poor ratings.

An interactive rating has five steps:

1. Background research by the ratings analyst and submission of proprietary data by the insurer.
2. Interactive meetings between ratings analysts and senior managers of the insurer.
3. Preparation of ratings proposal by lead analyst and submission of additional data by the insurer.
4. Decision by the ratings committee after presentation by the lead analyst.
5. Publication of rating on public web sites and provision of analysis to fee-paying subscribers.

*Background to an interactive rating*




1. Public ratings rely on public data only, with no input from the insurer; interactive ratings rely also on proprietary data and meetings with the insurer's senior managers. If an insurer pays for an interactive rating one year but does not want an interactive rating the next year, the agency may issue a public rating based on published financial statements, SEC filings, earnings reports, and similar data. An insurer expecting a downgrade may refuse an interactive rating, but the agency may proceed with a public rating to inform investors (and other audiences) that the previous rating is no longer valid.[8]

Most insurers have financial strength interactive ratings, often from two or more agencies. An insurer already rated by A. M. Best's may request another rating from S&P, Moody's, or Fitch, for several reasons. The insurer may want to issue debt through a holding company and seeks a rating from an agency with more experience in debt ratings; it may be publicly traded and wants a rating from an agency better known to investors; it may be dissatisfied with its current rating and believes the second rating will be higher.

*The insurer prepares a presentation for the interactive meeting consistent with the agency's outline.*

The rating agency assigns an analytical team to conduct basic research, using data from the insurer's Annual Statements and GAAP reports of recent years: reserve estimates from Schedule P, reinsurance recoverables from Schedule F, investment portfolio from the asset schedules. The analysis is *not* shared with the insurer; it serves as a check on the insurer's forthrightness and integrity and is used where the insurer's submitted data are absent or dubious.

Public data are rarely sufficient for ratings analyses. For example, reinsurance data do not show attachment points and limits of in-force treaties; investment schedules have scant data on derivative securities; reserving schedules do not show the segmented data that insurers use for their estimates. Rating agencies ask insurers to disclose underwriting, reserving, investment, and operating performance along with supporting data.

Rating agency analysts generally specialize by industry.[9] The rating team has a lead analyst familiar with the lines of business written by the insurer and one or more specialists. For example, if the insurer writes property exposures in Gulf Coast states, an analyst with expertise in windstorm models may join the team. If the insurer writes long-tailed lines of business, one analyst may be an actuary to prepare reserve analyses.

The rating agency requests certain presentations at the interactive meeting. Some are generic, such as business strategy and risk concentration guidelines, with a focus on information flow: how results are reported to executives and how directives are passed down to underwriters. Other topics are specific to insurers writing certain lines, such as how asbestos claims are handled or what reinsurance is used to control windstorm exposures. The insurer decides on the content of the presentation and may add additional topics.

For an initial meeting, rating agencies ask insurers to provide extensive background material. Some agencies provide checklists, to ensure complete information. The common types of requested information are

- Statutory Annual Statements and GAAP financial statements for past five years.
  - Quarterly financial statements for the past year, if available.
- History of the company focusing on major events, such as mergers, acquisitions, and expansions.
  - Biographies of senior executives with their insurance industry experience.
- Investment strategy, policy, and guidelines, and
  - How the investment committee of the Board of Directors reviews investment department activities.
- Organizational charts covering corporate structure and senior manager reporting relations.
  - Capital structure showing debt issues by holding companies and affiliates.
- Product descriptions and business strategy for each line.

The substance of the qualitative information varies greatly. Business strategy by line may be a paragraph for one insurer and a report for another. Rating agencies evaluate how insurers respond to the requests for information: does the insurer honestly compare its performance with that of its peers or does it provide summary figures that are already publicly available?

The interactive meeting is like an intricate dance: the rating agency seeks the insurer's knowledge of its risks and potential liabilities, and the insurer seeks the agency's view of its financial strength. The agency reviews Schedule P figures but wants also the insurer's reserve estimates, especially for exposures that are hard to estimate from publicly available data. During the interactive meeting, it compares the insurer's estimates with its own valuations from public data. The public data are used to evaluate the integrity of the insurer. If the

insurer's workers' compensation reserve estimates agree with Schedule P figures, the rating agency is more likely to trust its asbestos and pollution reserve estimates.

For example, the rating agency adjusts reserves in long-tailed lines for adequacy and discounts them at a conservative discount rate. But reserve adequacy, investment yields, and loss payment patterns differ among insurers, so the rating agency wants the insurer's analyses of reserve adequacy and discounting methods.

If the insurer has long-term debt through a holding company, goodwill, or substantial deferred tax assets, the rating agency computes net income after debt payments and taxes and re-states leverage ratios as a function of tangible equity capital.

An insurer should not withhold potentially damaging data that the analyst does not request. An insurer who strengthens year-end reserves after assuring a rating agency that its reserves are adequate loses credibility and worsens the agency's reputation with investors. The agency may place the insurer on a ratings watch until its next meeting, and it is less likely to trust the insurer's future reserve estimates. For insurers who need ratings each year, it is almost always better to inform agencies of likely problems before they become evident.

*Illustration:* Rating agencies use industry ratios of asbestos loss reserves to annual loss payments in recent years. If an insurer presents exhibits with low ratios that are not supported by data, the exhibits may not be presented to the rating committee. Some insurers tell rating analysts that the analysis is confidential and can not be shared. The analyst will not demand more information. But the analyst gives the rating committee a conservative (worst-case) estimate from industry figures, rather than the insurer's figure. The estimate reserve is usually greater than the insurer's own figures.

An insurer's officers are reluctant to disclose weaknesses, and their lack of candor may harm the rating. Undisclosed credit problems that lead to future write-offs ruin the insurer's credibility and may contribute to ratings downgrades. Informing rating agencies of expected write-offs of receivables before they occur may keep a good rating. Rating agencies who learn of adverse developments from the trade press after the management meetings often downgrade the offending firm.

Some insurers use a dry run with a ratings advisor. Financial underwriters such as Morgan Stanley serve as ratings advisors for firms issuing new debt, and actuarial consulting firms perform a similar role for insurers. The advisor takes the place of the rating agency, meets with the insurer's senior managers, and tells them its impression of their presentation. The insurer's managers may learn that their reticence harms the agency's view of their integrity, and that they must supply hard data to support a high rating.

*A rating committee decides the rating; the rating analyst presents the insurer's data to the committee.*

To promote consistency, the actual rating decision is made by a ratings committee, not an individual analyst. Rating analysts have different views on financial strength and rating factors. The lead analyst prepares a rating proposal for the committee, but the rating decision comes from the committee.

The rating committee has no permanent members; it is formed anew for each case from senior members of the agency. The insurer does not know its members, to avoid improper inducements. The ratings analyst is an intermediary, summarizing public data and proprietary information from interactive meetings into a report to the committee. The analyst may prepare an initial rating that is reviewed by the committee. Analysts are flexible in meetings with insurers, letting insurers volunteer information instead of eliciting data by intrusive cross-examinations. Some insurers mistakenly think that an analyst's acceptance of an unsupported assertion is a positive sign. But the rating committee relies on hard data. Experienced insurers provide the analyst with convincing data supporting their story.

Agencies generally use a top-down approach, starting with economic and industry forecasts and proceeding to the insurer's position among its peers. The committee evaluates underwriting cycles by line of business and

then the insurer's own performance, risks, and management quality. The industry evaluation is made by senior officers of the rating agency, bringing more consistency into the ratings.

The rating analyst is the insurer's advocate, and the insurer makes certain that he or she has the necessary supporting data. Knowledgeable insurers provide the rating agency analyst with the data needed for the report to the rating committee. The interactive meeting between the insurer and the analyst is the preparation for rating meeting between the analyst and the committee. Tangential material, such as slide presentations that are not backed by hard data, are not presented to the committee. Analysts collect data and information about the insurer to present to the rating committee. Analysts who receive inconsistent or incomplete data may present the information to the rating committee in a less favorable manner.

*Ratings and outlooks*

The committee decides on ratings by majority vote, though opinions of senior officers of the agency are often followed. But agencies hesitate to change ratings too quickly. Erroneous downgrades anger clients, who pay the agency's fees; erroneous upgrades ruin the agency's reputation with investors and agents.

Agencies delay down-grades by repeating the current rating with a negative outlook for several months. They reduce the rating only if the insurer can not raise capital or otherwise assuage the committee's concerns.

Initial ratings may be private or public; subsequent ratings are generally public. The rating agency informs the insurer of the committee's decision. If the insurer requested an initial rating and the agency has not previously rated the insurer, the insurer either agrees to a press release or requests that the rating be kept private. Decisions of the committee are appealed only if the insurer believes a material error was made and provides data correcting the error.

If the agency has previously rated the insurer, the rating is posted on the agency's web site and released to the press. Initially, rating agencies required subscriptions to their ratings and charged subscribers for the rating information. But information travels fast in efficient capital markets and most users need only summary figures (such as the letter rating). Rating agencies now freely provide basic information, such as the letter rating, and require subscriptions for more detailed assessments of insurers' solvency.

## *Section 3: Ratings Are Essential for Many Property-casualty Insurers*

Almost all insurers are rated, compared to a small percentage of firms in other industries; some large insurers have ratings from two or more agencies, despite their high cost. Other firms need ratings if they issue debt securities or are publicly traded. Most insurers have no debt and are not publicly traded, yet almost all are rated, for three reasons: (i) agents are wary of unrated insurers, since they might be financially distressed, (ii) third-parties rely on outside assessments of insurer solvency, and (iii) rating agencies are efficient at assessing financial strength.

*Unrated insurers:* In other industries, most firms with no debt have no ratings. But almost all insurers are rated, except for new firms. It is less expensive to pay for a rating than to demonstrate financial strength individually to others.[10]

*Reliance by consumers and third parties:* Independent agents use ratings to select insurers, and insurers use ratings to select reinsurers. Agents might be sued for providing insurance from a financially weak insurer. Reinsurance officers at primary insurers must evaluate the ability of reinsurers to pay obligations years in the future. They rely on commercial ratings, and an unrated reinsurer might not even be considered.[11]

*Efficiency:* Evaluating financial solidity requires expertise and extensive data. Most agents, underwriters, and even some regulators do not have the time, experience, or resources of the rating agencies to thoroughly research the financial condition of all insurers.[12]

*High ratings are important for certain lines of business.*

Financial ratings are particularly important for reinsurance, surety, structured settlements, homeowners, and some specialty lines. Insurers with low ratings are not able to compete in certain markets. Rating agencies assess financial risk efficiently and reduce costs when safety is essential. Third parties who rely on insurance coverage often demand that the insurer obtain a rating, as the paragraphs below describe.

Reinsurance is a global market, and many reinsurers are not licensed in the United States. Excess-of-loss coverage is long-tailed, and reinsurers are exposed to catastrophe and other large claim risks that are hard to foresee. Primary insurers need to assess the financial strength of reinsurers to balance premium vs credit risk. Strongly capitalized reinsurers may charge higher prices; some reinsurers provide letters of credit or other collateral to secure their obligations, but the security is expensive; weakly capitalized reinsurers may charge low premiums. A primary insurer can use the reinsurer's rating as one tool to assess the financial strength of the reinsurer. Small reinsurers with A ratings can compete with larger peers. A large reinsurer that is downgraded below investment grade may not be able to renew its treaties.

*Illustration:* Scor Re was the ninth largest global reinsurer in 2001. After large losses in 2001-2002, its net worth declined 70%, and its rating dropped to BBB– by the end of 2003, below the A– level normally expected of large reinsurers. It could not renew treaties with primary insurers outside its home country, and it left several reinsurance markets.[13]

Some reinsurance treaties explicitly link ratings and security. A treaty with a downgrade clause may specify that if the reinsurer fails to maintain an certain rating, such as A- or better, it must deposit funds covering its obligations or provide letters of credit as security. The downgrade clause benefits both parties: the reinsurer avoids the costs of collateral as long as it maintains its rating, and the primary insurer gets collateral to cover reinsurance recoveries if the reinsurer cannot meet its obligations.

Insurance often provides security to a third party. For example, a *surety* ensures that a construction firm will complete a project. Many sureties are specialized firms, exposed to high surety losses in recessions. Principles may require construction firms to obtain surety contracts from A rated companies. The cost of examining the surety's finances and risks are incurred by the rating agency, not by each principal. The rating also reduces the surety's costs. Instead of reducing prices or advertising heavily to persuade principals of its financial stability, it provides its rating.

Banks require property insurance to issue mortgages, often requiring that they be listed in the policy as payees up to the amount of the mortgage. As a lien-holder, the bank receives the insurance payment if the property is destroyed. The banks can not independently verify the financial strength of the insurer, so they rely on commercial ratings.

Personal property is subject to natural catastrophes. An insurer with excessive risk (high concentration of exposures in coastal areas with inadequate reinsurance arrangements) may become insolvent after a hurricane and unable to pay claims to banks providing mortgages. It is too expensive for banks to assess the solidity of each insurer. Instead, banks may require Homeowners coverage on mortgaged properties from insurers with investment grade ratings, relying on rating agency's risk evaluation.

Structured settlements indemnify accident victims by periodic payments, often funded by life annuities. These settlements are particularly important for young children or persons incapable of handling large sums of money. The casualty insurer paying the structured settlements may buy a life annuity from a life insurer to fund the payments. To ensure that claimants receive secure funding, some Canadian courts require structured settlements from A rated insurers, and plaintiff attorneys often make similar demands in the U.S. Courts and attorneys can not independently judge the financial strength of insurers, and they rely on commercial ratings.

## *SECTION 4: THE INTERACTIVE MEETING WITH THE INSURER'S SENIOR MANAGERS*

The rating agency sets the agenda for the interactive meeting, with the insurer providing the substance. The rating agency expects to meet with senior managers for investments, underwriting, finance, actuarial, and reinsurance, as well as with the chief risk officer. Organizational, management, and capital structures, operating characteristics, business objectives, financial goals, reinsurance arrangements, and competitive strategy are major elements of interactive meetings. An insurer with much debt issued by a holding company can expect extensive analysis of its capital structure and associated risks, and a stand-alone monoline medical malpractice insurer can expect a focus on its reinsurance arrangements.

*Interactive Meetings Focus on Qualitative Issues Not Available from Public Data.*

Quantitative data, such as operating income, combined ratios, and investment yields, are not always ideal predictors. Underwriting cycles, asset volatility, and catastrophes affect past performance but may not affect an insurer's future returns. Rating agencies stress qualitative aspects of insurers' strengths and weaknesses, such as business strategy and management expertise.

Many qualitative attributes, such as exclusive sales forces, high name recognition, and reputations for honest claim settlement are expensive to develop and have uncertain benefits. Rating agencies judge the costs vs potential rewards of developing qualitative attributes. For example, acquisitions and mergers have uncertain benefits and high costs; they may lead to a ratings upgrade by one agency and a downgrade by another. In 2010, after multi-billion dollar investment losses and a government bail-out, AIG sold parts of its international operations to Prudential (a British life insurer) and Metropolitan Life (a New York life insurer) at prices favorable to the buyers. Most analysts viewed the acquisitions positively for Prudential and MetLife, who replaced AIG as global leaders. But Moody's changed its outlook on MelLife to negative after the deal, issuing a press report that the acquisition may not produce the anticipated synergies.

*Qualitative attributes must be objective and measurable.*

Underwriting expertise is critical for insurance operations, but rating agencies can not easily judge underwriting expertise. Quality of claims service is subjective; rare is the insurer that does not say its quality is best. Brand names may lead to greater consumer persistency and high renewal rates. But brands are more important for industries with high profit differentiation. Many consumers view insurance as the same from all firms. Brand loyalty may lead to high renewal rates but not to better new business. Economies of scale may reduce costs from larger volume of business. Insurers serving small niche markets may have lower ratings, unless they show long-term higher profits from greater underwriting expertise. But large insurers must show measurable effects of size to improve their ratings.

*Organizational structure:* Does the insurer have subsidiaries or affiliates; is it owned by a holding company? Are subsidiaries and affiliates used for pricing (different rates by legal entity), are they intended for operations in specific states or countries, or were they formed to handle discontinued business (asbestos, pollution)? An outline of the insurer's organizational structure can be gleaned from public documents, but the reasons for the different entities is not shown. Rating agencies are especially concerned about off-balance sheet liabilities for debts of affiliates. They first evaluate each legal entity, and then raise or lower the rating for benefits or liabilities of the corporate group. For example, a U.S. insurer that has a Japanese subsidiary and guarantees its liabilities to satisfy Japanese regulators faces risks that a domestic-only company does not have.

*Capital structure:* Many insurers are financed by equity only; others have complex capital structures. Topics discussed in rating meetings include: Is the insurer owned by a holding company that has issued debt? Is the debt guaranteed by the insurer's assets? Has the insurer or holding company issued hybrid securities, with debt characteristics but treated as equity in statutory accounting? Has the insurer secured loans by affiliates or subsidiaries? Have subsidiaries gone bankrupt without being bailed out by parents? What is the coupon rate on the holding company debt? How much of statutory capital is intangible (goodwill, deferred tax assets)?

The relevant financial ratios depend on the capital structure. Agencies examine net income after taxes, debt, and lease charges. The debt may be issued by a holding company, an affiliate, or a subsidiary, and it may not be evident on the insurer's own financial statements. If the insurer has intangible capital, as is often true after an acquisition, the rating agency computes its ratio of debt to tangible capital to ascertain its financial leverage.

*Management structure:* How long have senior managers worked in the insurance industry? Are business lines and branch offices relatively independent, or do home office managers control major underwriting decisions? Are line operations separate from staff operations, or do business units operate as small insurers with internal staff support? For example, does personal auto have its own actuarial, finance, and claims staff?

No one structure is necessarily better than others. Rating agencies focus on how quickly senior managers learn of emerging risks. For example, accelerating medical inflation may cause persistent losses in several lines of business. Separate management for each line may help underwriting flexibility, but senior managers must be able to assess overall enterprise risks.

*Strategic objectives:* Insurers have different objectives and business strategies. Some insurers seek continued growth, even at the expense of short term losses; others seek stable profits even at the cost of lower market share. Rating agencies ask: Does the insurer follow market prices through hard and soft markets? Does the insurer seek niche markets? Does it have a strong brand name? Does it stress low cost for its products?

Size and efficiency are important, and rating agencies evaluate market share, competitors, and government licensing as an exclusive distributor. Efficiency may increase market share, which leads to further benefits. In the United States, low acquisition costs and independent pricing by personal lines direct writers led to their dominance of personal auto and homeowners, economies of scale, and further cost reductions.

Market share growth from lower prices is a two-edged sword. Rating agencies are wary of rapid growth that is not justified by other insurer attributes. Interactive meetings are essential for judging qualitative attributes, since the rating agency relies on the insurer to interpret the observed data. Rapid market share growth is good if it reflects superior products and bad if it reflects underpricing. The insurer must demonstrate that its growth rests on successful business strategies and validate them by actual performance. An apparent advantage with poor operating results means the insurer can not convert favorable attributes into market growth or profits.

Agencies focus on coherence of strategies and insurers' ability to attain them. Insurers with costly distribution system might focus on niche markets with alternative distribution systems for target consumers, not on price competition for generic products. Insurers accepting low returns to gain market share should be able to demonstrate the long-term rationale for this strategy and their ability to withstand short-term losses.

*Financial goals:* Insurers and rating agencies use a variety of performance measures. Financial statements show statutory and GAAP earnings, and many insurers compute some type of economic income. Rating agencies ask: Does the insurer target return on statutory surplus, GAAP equity, or invested capital? What financial measures are used for performance measurement and manager bonuses? How closely have actual returns matched target returns in past years? How do the target returns compare with industry averages? How does the insurer estimate economic income? Does it use economic value added (EVA) or risk adjusted return on capital measures (RAROC)?

*Acquisitions:* Profitable insurers have the money for good acquisitions, which lead to further profits. Some large insurers achieved their dominance by fleets of inter-related companies built from sensible acquisitions. But acquisitions can be as harmful as they are helpful. Fewer than a third of corporate acquisitions increase the market value of the combined entity. Acquisitions may cause downgrades if the agency doubts the insurer can absorb the new firm into its culture or if expected synergies offset costs. An acquisition may fail to produce the expected benefits, and rating agencies look closely at complex corporate transactions.

Insurers may discuss potential acquisitions with rating agencies to avoid actions that may spark a downgrade. After the acquisition, they provide data showing expense reductions, division of responsibilities, and smooth transition of the new managers into the parent firm.

Rating agencies closely examine acquisitions that strain the resources of the parent. They ask: How well have past acquisitions been integrated? Does the insurer contemplate further acquisitions? Even good acquisitions prompt rating reviews, since anticipated synergies often dissipate before they are realized.

*Diversification may reduce insolvency risks, but it must be balanced against core competencies.*

Diversification smooths income and reduces solvency risk, but may reflect a straying from core competencies. Geographic spread of risk is essential for catastrophe perils, such as hurricanes for homeowners or terrorist attacks of office buildings for workers' compensation. If the insurer has underwriting expertise in each region, the geographic spread of risk reflects better agent placement. Single state insurers rarely receive the highest ratings, unless they are exceedingly well capitalized or are part of a larger insurance fleet.

Diversification by product is reasonable only if it is done for underwriting purposes. Insurers, like other firms, focus on core strengths where they have underwriting expertise and cost advantages. Expansion to new lines is risky: high costs of new business, lack of expertise, and costs of new distribution systems. Rating agencies examine insurers with much new business to judge if synergies with existing business justify the expansion.

Some rating agencies emphasize core competencies more than diversification. Insurers with well-structured exclusive agency or direct marketing systems need not use other distribution channels. Multiple distribution channels sometimes cannibalize each other, with growth in one channel coming from declines in others.

*The ideal qualitative attributes are product innovations that are not easily copied.*

Good qualitative attributes differentiate an insurer and are not easily copied. In other industries, successful firms may have patents and trade secrets. In food industries (soft drinks, chocolates), firms may even avoid patents to keep their formulas secret. Brand names and patents do not always reflect objective differences. For example, consumers of beer and cigarettes are loyal to particular brands even if they can not distinguish the brand in blind tests.

Insurance policies, class plans, and rates are public information that are easily copied and cannot be patented. For example, medical payments coverage in personal auto, homeowners, and general liability provide first aid treatment to accident victims and have high appeal. They cost little because of their low limits and may even reduce costs by preventing bodily injury claims. But the coverages are now offered by all insurers. Rating agencies may not view coverage innovations as a persisting qualitative attribute.

Class plans are best if they are not easily copied. Generalized linear models gave some insurers long-term advantages because their peer companies did not have the actuarial and statistical expertise to replicate the plans. More refined class variables, such as more age distinctions in personal auto, are easily copied and have less long-term value. The first insurer to use a new class variable, such as credit rating in personal auto, may build a profitable block of preferred business. High market share with strong policyholder loyalty (many renewals) may lead to long-term profits.

New product designs, such as package policies (homeowners and small businessowners), high deductible liability coverages, claims-made professional liability; and various specialty coverages, give the first insurers several years of high profits. Low cost generic products with high returns on capital, such as personal auto policies with discounts for good credit scores, and differentiated products with premium pricing, such as high deductible policies in states with large workers' compensation residual markets, were ideal product innovations. Their success lead eventually to copying by others, but they provided strong competitive advantages for the insurers who first sold them. But policy forms are filed with states, publicly known, and not patented. Many new product designs have little effect on long-term profits.

*Optimal operating (underwriting) characteristics depend on the insurer's lines and business strategy*

Rating agencies stress balance sheet strength (including loss reserve adequacy) and operating performance. They emphasize balance sheet strength for writers of short-tailed lines of business with high catastrophe risk. They emphasize stability of annual earnings for writers of long-tailed lines with high reserving risk.

Underwriting is the core of insurance operations. The pricing and underwriting standards that underlie an insurer's strategy are not easily quantified. The insurer's task is to persuade the rating agency that competitive strengths will persist and weaknesses will be corrected.

Rating agencies judge insurers against their peers and set objective criteria for consistent evaluations. All insurers say they underwrite carefully and provide excellent service; these assertions carry little weight. Rating agencies evaluate the coherence of the insurer's strategy. Products geared to specific markets with profitable risk-adjusted returns on capital indicate a sustainable business strategy.

Rating agencies have financial ratios for each insurer: combined ratios, investment yields, and pre-tax net income. Interactive meetings allow rating analysts to evaluate the underwriting and pricing characteristics that provide competitive advantages to the insurer. The paragraphs below summarize the operating issues normally covered in the interactive meetings.

*Lines of business:* What competitive advantages does the insurer have in its major lines of business? How do niche markets (earthquake insurance, substandard auto, surety, excess layers) fit with the major lines? Does the insurer sell package policies to select policyholders?

*Pricing:* Rating agencies evaluate pricing strategy, not specific techniques: does the insurer target high or low quality insureds? Insurers targeting high quality insureds may reduce the price based on conservative underwriting and focus on high persistency for long-term profits. Insurers targeting low quality insureds may increase the price to cover higher than average losses and focus on underwriting standards that weed out bad risks. In many lines, high cost insureds have higher risk but higher margins. Low cost insureds have low risk but low margins.

*Underwriting controls:* In long-tailed lines of business, pricing and underwriting errors may compound over many years. Rating agencies want to know what feedback line underwriters get. For long-tailed lines, how quickly do they learn their policy year results? For lines with catastrophe exposure, do they know their contributions to tail value at risk before catastrophe events occur?

Insurance losses are often settled years after policies are written, and underwriting managers may not have good measures of profitability. Actuarial bulk reserves, excess-of-loss reinsurance costs, and costs of holding capital must be allocated to underwriting offices so that line managers can estimate ultimate results.

*Illustration:* An umbrella underwriting unit often has favorable policy year combined ratios on direct business, since losses emerge slowly and may not be recognized for years. Rating agencies judge whether bulk reserve estimates, reinsurance costs, and the costs of holding additional capital for umbrella policies are provided to the manager of the umbrella underwriting unit and used to assess the return on capital.

*Long-term strategy:* Rating agencies stress the strategic considerations affecting long-term profits. How does the insurer expect to outperform its peers? What are the insurer's strengths and weaknesses? How well does the insurer know the strategy of its peers? Does the insurer target niche markets, or does it compete on cost for all insureds?

The rating agencies use a multi-stage analysis: industry, line, and insurer. They evaluate first the prospects for the property-casualty insurance industry based on expected investment yields and underwriting returns. Bursting of a housing bubble and widening credit spreads in 2007-2008 led agencies to downgrade insurers with exposure to mortgage-backed securities and corporate bonds (much of the industry).

Rating agencies evaluate prospects for each line of business based on its likely growth, current capitalization, and insurers' negotiating power with their consumers and suppliers. For example, workers' compensation for manufacturing firms faces declining revenue as workplace hazards decrease. Insurers that served traditional manufacturing firms face severe contraction unless they have feasible strategies for alternative markets. The third stage focuses on the individual insurer, evaluating its competitive advantages relative to its peers.

*Distribution systems:* Supplying products to consumers is expensive: insurance acquisition costs may be 20% or more of premium. Efficient systems reduce costs and improve marketing control, but they require high up-front investment, such as subsidies to exclusive agents in their early years, discounts for insurance coverage sold through banks, discounts for insurance sold through voluntary associations, advertising campaigns to establish brand names, direct response insurance sales to avoid agency costs, and participation in internet web sites. Initial expenses lower current profits but may improve the insurer's future profits.

Rating agencies stress control, cost, and consumer access. Does the insurer control its distribution system (exclusive agents, direct marketing) or does it work through independent agents and brokers? Are its costs lower or higher than those of its peers? What are the conversion ratios (new policy sales over quotations) and renewal ratios by line? Does the distribution system reach the target market?

*Control:* Exclusive agents give insurers control over their consumers: they better select markets and classes and retain insureds. The agent is an employee of the insurer, and the insurer own the rights to renewals. The insurer decides the marketing strategy and targets consumers. It can price higher without fear that agents will switch consumes to competitors; it can price lower to gain market share and retain the renewals.

In contrast, independent agents own their renewals and can switch policies to competing insurers. They avoid insurers in financial distress, lest they be responsible for policyholder losses. An unexpected loss from stock market declines, the effect of a hurricane on the insurer's capital, or adverse reserve development may result in a ratings downgrade, leading agents to switch policies to higher rated peers. The lower business volume and a perception of financial weakness may also encourage agents to avoid the insurer.

Rating agencies consider the control that *direct writers* have over their business. A direct writer can more easily change its mix of high vs low cost homes or urban vs rural autos to meet perceived risks. Quantitative data may not show poor performance in the current year, but lack of control over consumers may hurt future results. The following paragraphs describe how rating agencies balance attributes of distribution systems.

*Cost:* Independent agents have high costs. Exclusive agency forces are expensive at first, requiring multi-year subsidies for new agents to set up offices, but they have high retentions at low cost in subsequent years. Independent agency insurers rarely adopt exclusive agency systems, lest their current agents switch business to competitors. Exclusive agencies reduce costs for long-persisting lines (personal auto, homeowners, small commercial) by their low renewal commissions. Similarly, direct marketing has low variable costs and works well for insurers who dominate markets, but it may have high fixed costs (advertising) and low response rates.

*Consumer access:* Internet sales are low cost, but they may not provide access to preferred consumers. Visitors to insurance web sites are often high cost insureds unhappy with their current premiums. The insurer lacks screening by the sales agent. Direct marketing through voluntary associations gives access to preferred consumers, but the response rate is low, causing a risk of adverse selection. Some direct marketing systems allow little selection of insureds. Many insurers have been burned by TV sales that led to adverse selection.

Direct marketing distribution systems do not promote brand loyalty, since the insurer or agent has no personal contact with consumers. TV marketing stresses low prices, which may limit profits. Voluntary associations may switch an entire block of business to a competitor with lower rates.

*Growth:* Growth is a result of past profit and a harbinger of future profit. Successful insurers grow, and growing insurers achieve market power. But growth must be judged critically. Is the insurer growing faster or slower

than its peers? Does its growth vary with the underwriting cycle? Does growth stem from lower premiums or better underwriting? In what lines does the insurer expect to grow? Where does it expect to shrink?

Rating agencies are especially concerned about insurers who can not easily shift away from low return blocks of business. An insurer with an exclusive agency force in a state that has suppressed rates below adequate levels may feel that it can not reduce its premium volume because of commitments to its agents. Nimbler insurers forecast expected profits for different states and lines and adjust their marketing accordingly.

Insurers speak of profitable growth; rating agencies judge if the growth is indeed profitable. Almost all insurers say they do not follow markets blindly, cutting rates as underwriting cycles turn down simply to retain market share. Rating agencies assess if business strategies seem likely to succeed. For example, a rating agency may question an insurer that says it writes only profitable business and reduces sales in soft markets but has a direct writing sales force that is compensated primarily as a percentage of new business.

*Technology:* Insurance is a technology driven industry. Insurance policies have changed little, but pricing and underwriting have changed over time as new technology has allowed better analysis of data. Rating agencies judge if an insurer's technology is up-to-date. Does the insurer provide relational databases to pricing and accounting personnel? Does the insurer use current pricing, reserving, underwriting, and ERM tools?

Generalized linear models (pricing), stochastic reserving tools, credit scoring (underwriting), and economic capital models are current actuarial tools viewed favorably by rating agencies. These actuarial tools take several years to implement, and they have tremendous effects on selecting and valuing good business.

*Regulatory interaction:* Insurance is highly regulated. Quick approval of policy forms, premium rates, and class plans from regulators gives insurers competitive advantages over their peers. Rating agencies check if the insurer lobbies in state and federal arenas or relies on trade organizations. Does the insurer have rate filings and class plans approved by state insurance departments, or does it rely on bureau filings and class plans?

*Claims handling:* Insurers' cash outflow depends on their claims handling. Some insurers settle claims quickly to avoid litigation expenses; others fight dubious claims to avoid future claims. Asbestos claims show the merits of both strategies. Settling a class-action suit quickly is less risky and usually costs less than allowing the suit to proceed to trial. But quick settlements prompt more claims.

Rating agencies ask: Does the insurer promote cost-saving claims handling programs: back-to-work programs in workers' compensation, structured settlements in products liability, quicker claim payments in personal auto? What percentage of claims are litigated? How does the insurer's claims settlement practices compare with those of its peers?

*Expense management:* Well-managed insurers keep expenses reasonable; left unchecked, expenses rise quickly. Rating agencies examine if the insurer's expenses are higher or lower than average. Does the insurer monitor expenses in sufficient detail to identify and correct poor performance?

High expense ratios impair competitiveness and form a drag on earnings. Insurers with high expenses may lose business to more efficient competitors. By comparing the operating practices of peer companies, rating agencies try to identify inefficient insurers.

*Current reinsurance arrangements vs reinsurance recoverables on past exposures*

Rating agencies focus on the insurer's reinsurance arrangements vs its catastrophe and large loss exposures. After Hurricane Andrew in 1992, several Florida Homeowners insurers became insolvent because their direct losses exceeded the limits of cat covers.

*Coverage:* Rating agencies examine the insurer's current reinsurance program and recent changes in treaty limits, attachment points, and lines of business covered. They ask insurers for details of catastrophe covers

and corporate excess-of-loss treaties. Reinsurers are often excellent judges of a reinsured's financial strength, and their underwriting and pricing actions may signal potential risks. Higher attachment points or a greater coreinsurance percentage may indicate a reinsurer's concern that risk quality is poor. (It may also indicate the primary insurer's belief that less coverage is needed or the reinsurance is too expensive, so this Information must be examined carefully.) Changes in reinsurance pricing may reflect past results. Increasing reinsurance rates that do not match reinsurance underwriting cycles may indicate the reinsurer's belief that the reinsured is financially distressed. Reinsurers have better knowledge of the primary insurer's underwriting portfolio than the rating agencies has, so relying on reinsurers' pricing decisions is often useful.

*Catastrophe modeling:* To evaluate insurers with high property exposure in catastrophe-prone areas, rating agencies may compare the insurer's gross catastrophe modeling with its catastrophe covers. Catastrophe models generally provide the gross loss at various percentiles of the loss distribution, such as a 1 in 250 year event (the 99.6 percentile). An insurer may have a stated ERM goal of "no more than a 10% loss of surplus" except for a 1 in 250 year event. The rating agency would compare the attachment point and cover of the catastrophe treaty with the insurer's surplus and its modeling of catastrophes.

*Risk transfer:* Not all reinsurance transfers risk. Financial reinsurance, funds withheld treaties, and treaties with offshore reinsurers are potential warning signs to rating agencies. Some arrangements circumvent the strictures of statutory accounting; others hide solvency problems.

## *SECTION 5: RATING AGENCY CAPITAL REQUIREMENTS*

Since the late 1990's, rating agencies have been publishing capital requirements for each rating. Insurers set policy prices, limit business expansion, avoid high-risk policies, sell blocks of business, or structure reinsurance to meet these capital requirements. Pricing actuaries once used premium to surplus or reserves to surplus leverage ratios for discounted cash flow (NPV and IRR) pricing models. Now they are more likely to use the required capital for their desired rating from Best's, S&P, Moody's, or Fitch.

Rating agency capital standards began as adaptations of the NAIC RBC requirements. The agencies modified the RBC formula to include other risks, such as interest rate risk, catastrophe risk, or asbestos and pollution loss reserves. They changed the RBC risk measure from the worst case year to value at risk, tail value at risk, or expected policyholder deficit. Moody's and Fitch use stochastic economic capital models.

Capital standards are salient differences among the rating agencies. The agencies all use data from Annual Statements, SEC filings, analyst meetings, and earnings reports, and they discuss similar management issues in their interactive meetings with insurers. But their capital formulas differ greatly, and they stress the accuracy and flexibility of their models to attract clients. Each rating agency chose a different means of competing for clients by producing a better capital adequacy formula.

Rating agencies examine quantitative measures of balance sheet strength and operating performance and qualitative analyses of management quality, operating strategy, competitive advantages, and ERM practices. Agencies say that qualitative items are important: how ERM is used to mitigate risks and whether competitive advantages are sustainable. But judging qualitative items is not easy. Insurers provide idyllic pictures of ERM practices and competitive strategy at interactive meetings, and agency evaluations are subjective.

Rating agencies strive for consistency: clients of similar financial strength should be rated similarly. Standard insurance financial ratios (quantitative data) do not capture qualitative items that affect long-term profitability, but a stress on qualitative issues may cause inconsistencies: the analyst for one insurer may give credit for some qualities that another analyst does not.[14] To ensure consistency, agencies relate ratings to economic capital measures and issue ratings by committees independent of the ratings analyst.

To be consistent, analysts' ratings should have the same meaning. If two analysts each recommend 30 "A-" ratings one year, the number of defaults should be similar. But an A- rating has a negligible default probability, so differences among analysts are hard to validate. Rating agencies therefore use quantitative measures to ensure consistency. Analysts should have similar capital ratios among their A- clients. Rating agencies publish the expected capital ratios for each rating, though qualitative factors influence the final rating. Analysts begin with the capital adequacy measure and adjust for management quality, ERM, and competitive advantages.

To succeed, rating agencies must distinguish weak vs strong insurers: identify stable insurers who are under-rated by other agencies (gaining clients who will pay for the rating) and identify weak insurers who are over-rated by other agencies (strengthening a reputation for accurate ratings). All agencies have the same data (accounting statements and presentations by clients), use similar methods (quantitative ratios of balance sheet strength and operating performance), and produce the same product. Ratings are easily understood by investors, but they are perhaps less accurate than a perfectly competitive market might provide.

The capital models of the four major agencies differ. A more accurate model helps an agency attract insurers who might be mis-rated by generic models. Inaccurate capital models may damage an agency's reputation or lower its market share. A rating agency with high capital standards and low ratings may lose clients. A rating agency with low standards and high ratings may lose investors' trust in its objectivity or financial expertise.

Best's adopted underwriting risk estimates, expected policyholder deficit risk measure, and interest rate risk from the American Academy of Actuaries task force on risk-based capital. By building on the work on casualty actuaries involved in RBC systems, it had the first sophisticated capital model among the rating agencies.

Moody's and Fitch developed stochastic capital models, since fixed formulas could not accurately assess the risks of most insurers. They used actuarial studies of risk variances and dependencies, aligning their models with papers of the CAS. But persuading clients that proprietary models estimate required capital is difficult.

Many insurers have their own economic capital models. The European Union Solvency II directives advocate principles-based RBC solvency monitoring, and Standard and Poor's proposes partial weight for internal company models. But assessing the quality of insurers' internal models has proved difficult.

This section focuses on the distinctive attributes of rating agency models:

- A. M. Best's use of the *expected policyholder deficit* to calibrate risk.
- Moody's and Fitch's use of *stochastic cash flows* to model economic capital.
- Standard and Poor's emphasis on *principles-based* models and ERM practices.

### *Best's Capital Adequacy Ratio*

Best's BCAR (Best's Capital Adequacy Ratio) retains the RBC structure of independent risk categories with a covariance adjustment. RBC has six risk categories (fixed-income securities, equities, credit, reserves, written premium, and off-balance sheet risks). BCAR adds interest rate risk (which the NAIC did not include in its property-casualty formula) and risks not easily quantified from accounting statements: asbestos/pollution exposures and catastrophe risks.

The NAIC uses a worse case year measure to calibrate reserving and new business risks that is influenced by underwriting cycles in certain years: a different experience period gives different risk charges. The RBC charges are not consistent across risks. Asset risks reflect the pre-1990 MSVR (mandatory statutory valuation reserve) for life insurers, and credit risks are chosen subjectively. Instead of the worst case year and MSVR, BCAR uses an expected policyholder deficit (EPD) risk measure. BCAR uses a 1% EPD ratio for all sources of risk. In financial terms, the charge for each risk is the amount of capital such that the cost of a put option offsetting the risk is 1% of policyholder reserves. In conventional insurance terms:

- The *EPD* is the pure premium for unlimited aggregate excess-of-loss reinsurance.

- The *EPD ratio* is the EPD divided by the market value of held reserves.

*Illustration:* Insurer ABC's general liability reserves have a market value of $V, but they may develop adversely or favorably. ABC buys an aggregate excess-of-loss reinsurance treaty that pays the adverse development above $Z. The pure premium for the treaty is $P.

- The EPD ratio is $P / $V, and the required capital is $Z.
- As $Z (the attachment point) increases, the EPD and the EPD ratio decrease.
- Best's chooses $Z so that the EPD ratio is 1%.

The same 1% EPD ratio is used for all risks: capital losses on stocks, bond defaults, bond losses from interest rate movements, uncollectible reinsurance recoverables, reserve development, and new business losses. For each risk, the capital charge $Z is set so that aggregate excess-of-loss reinsurance covering losses above an attachment point $Z has a pure premium equal to 1% of reserves. The EPD depends on the volatility and size of the risk. For example, equities have more volatility than bonds, so they have a higher EPD and capital charge. But insurers hold less equities than bonds, so the marginal effect of equities on overall required capital may be less than that of bonds.

RBC looks at default risk on bonds and other fixed-income securities. Default risk on bonds held by P/C insurers (mostly Treasuries, investment grade corporate bonds, and municipal bonds) is slight. The major risk for insurers stems from interest rates rising above market expectations, leading to market value losses on fixed-income securities. Using average industry figures, Best's finds that a 120 basis point rise in interest rates gives a 1% EPD ratio. It stresses each insurer's asset portfolio with a 120 basis point interest rate rise.

RBC placed high weight on reserving risk, as befits a regulatory model. Regulators are most concerned that insurer pay their loss obligations to existing claimants. Distressed insurers often post deficient reserves. The NAIC viewed reserving risk as its highest priority.

BCAR uses an analysis of reserve volatility similar to one done by the American Academy of Actuaries in 1993-94 to estimate reserving risk and new business risk. Its analysis indicates that the RBC written premium risk charges should be raised relative to the reserving risk charges so that both have a 1% EPD.

Economic capital models can be bottom-up or top-down. A bottom-up approach determines capital charges for each risk and line of business and combines them with diversification factors. A top-down approach determines overall capital requirements from a multivariate distribution of all risks and allocates the required capital back to risk and line of business.

Best's uses loss distributions for each risk and line of business, giving separate capital charges by risk and line. To most accurately determine the required capital for the insurer, one should use a multivariate loss distribution for all risks and lines. Multivariate distributions of this sort are extremely difficult to gauge, so BCAR uses the covariance adjustment and the loss and premium concentration factors in the RBC formula. The net required capital for all risk categories combined is

$$\sqrt{(B_1)^2 + (B_2)^2 + (B_3)^2 + (B_4)^2 + (B_5)^2 + (B_6)^2} + (B_7)$$

B7 is off-balance sheet risks; B1-B6 are bond, equity, interest rate, credit, reserves, and new business risks.

The expected policyholder deficit procedure requires little capital for low volatility risks, and the square root rule further reduces the marginal capital of small risk categories. If equities and loss reserves are equally volatile, and equities are one tenth as large as loss reserves, the marginal effect of the equities capital charge is one tenth that of loss reserves.

Equities and loss reserves have the same absolute capital charge before the covariance adjustment, but loss reserves has ten times as great a marginal capital charge.

In the RBC formula, almost all marginal capital charges stem from reserving and written premium risks, with little capital stemming from fixed income and equities risks. Best's partly corrects this problem with higher asset risk charges, but overall capital is still heavily weighted toward underwriting risks.

The financial crisis of 2008-09 has led the rating agencies, including Best's, to reconsider the weighting of capital charges by risk. In particular, hurricanes, earthquakes, equities, and financial derivatives caused large losses for insurers since RBC was first implemented. Reserves for major lines have had little adverse development, but asbestos reserves have led to enormous losses. Reinsurance recoverables have not led to serious problems. The rating agencies re-estimate parameters of their capital models as new data emerge.

### *Stochastic cash flow capital models*

Moody's and Fitch use stochastic cash flow models to assess capital requirements.

- The models form distributions of each risk and simulate repeatedly from them.
- Cash flows are projected until all current liabilities are settled.
- Required capital is set by a value at risk or tail value at risk measure.

The cash flow models provide full investment income offsets to full value loss reserves.

RBC, Best's, and Standard and Poor's use investment income offsets to reserving and written premium risks. The rating agencies use conservative discount rates and loss payment patterns to avoid over-stating the fair value of the insurer. RBC and Best's use 5% discount rates; Standard and Poor's uses a lower discount rate, based on current yields.

The fair value discount rates used by RBC, Best's, and Standard and Poor's range from 3% to 5%. They may be substantially less than the insurer's investment yield when interest rates are high. The stochastic models use the insurer's investment yield for the cash flow simulations.

Stochastic cash flow models examine the accumulated cash flows of assets vs insurance liabilities. Asset returns are based on interest rate generators and random walk simulations of equity returns. The interest rates and simulations are arbitrage free: that is, the mean return is the market forward rate, which is generally higher than current short term rates.

*Illustration:* The term structure of interest rates is 5% for one year, 6% for two years, and 7% for three years. These are risk-free spot rates: \$1 invested now yields \$1.05 in one year, $\$1 \times 1.06^2 = \$1.12$ in two years, and $\$1 \times 1.07^3 = \$1.23$ in three years. The implied interest rate from 2 to 3 years is \$1.23 / \$1.12 – 1 = 9%.

Cash flow simulation models are of two forms, depending on the treatment of negative cash balances at intermediate dates. The strict version requires the insurer to liquidate assets if no other cash is available. The more liberal version assumes the insurer borrows funds at short-term rates to satisfy sudden cash needs.

The rating agency stochastic models use either value at risk (VaR) or tail value at risk (TVaR) measures. A 99% VaR is the capital needed to remain solvent at the 99$^{th}$ percentile of the aggregate loss distribution. A 99% TVaR is the average capital needed to remain solvent in the 1% worst scenarios.

*Illustration:* A rating agency runs 50,000 simulations of an insurer's aggregate losses from all risk sources. It sorts the results from worst to best outcome. In the 500$^{th}$ worst outcome, the insurer loses \$250 million. The average of the 500 worst outcomes is a loss of \$600 million. The 99% value at risk is \$250 million, and the 99% tail value at risk is \$600 million.

Fitch and Moody's use interest rate generators to compute interest rate risk. Moody's uses 60,000 simulations, each of which has a path of short duration and long duration interest rates. As the insurer sells bonds to pay loss obligations, scenarios with rising rates show market value losses.

The simulations provide the asset liability management analyses once done by matching durations of bonds and loss reserves. The simulations are more informative, since they encompass movements of both short- and long-term interest rates, sector spreads, credit spreads, and loss cost trends. But the simulations are harder to evaluate or replicate. The interest rate risk charge depends on the mean reversion and volatility parameters in the interest rate generator. The stochastic model often seems like a black box to insurers.

### *Principles-based systems*

Standard and Poor's chose not to form its own stochastic economic capital model. It has an accounting model based on the NAIC's RBC formula, but with no financial risk measure or covariance adjustment. It does not use actuarial or financial models for underwriting and asset risks, and it has no diversification adjustment or actuarial risk measure. Instead, it focused on evaluating insurers' enterprise risk management systems and internal capital models. It bases capital requirements on a weighted average of its own formula and the client's economic capital model.

Standard and Poor's reasons that well-managed insurers evaluate their capital needs more accurately than a rating agency can. Insurers examine distributions of reserve development using extensive data bases and sophisticated reserving methods. They can assess value at risk, tail value at risk, and expected policyholder deficit better than a rating agency can using public data.[15]

## *Appendix A: Financial Strength Ratings vs Bond Ratings*

Credit quality and financial strength are continuous variables. Markets rate on continuous scales. For example, the spread of a corporate bond above Treasuries may be anywhere from 100 basis points to 300 basis points. In theory, insurers might be rated on a scale of 0 to 100. But people can not make such fine distinctions. It would be hard to distinguish a rating of 82 vs a rating of 83.

Instead, the rating agencies use letter scales (introduced by Fitch). The highest rating is A++ (or AAA) and the lowest rating is F, meaning the insurer is in liquidation. The scales of the major agencies are similar, though not identical. This section shows the scale used by A. M. Best's; the web sites of the other agencies show their letter grades.

Best's divides insurers between *secure* (likely to meet their insurance obligations) and *vulnerable* (may not meet their obligations in adverse scenarios). Secure insurers are grouped into three categories (*superior*, *excellent*, and *good*) with two levels in each. Vulnerable insurers are grouped into seven categories ranging from *fair* to *in liquidation* with ten levels (in total). The last entry, a suspended rating, might occur after a major event, such as a hurricane or earthquake, whose effects on the insurer are great but still uncertain.

| *Secure* | | *Vulnerable* | |
|---|---|---|---|
| *Excellent* | A++, A+ | *Fair* | B, B- |
| *Good* | A, A- | *Marginal* | C++, C+ |
| *Fair* | B++, B+ | *Weak* | C, C- |
| | | *Poor* | D |
| | | *Under Supervision* | E |
| | | *In Liquidation* | F |

| | |
|---|---|
| *Rating Suspended* | S |

A. M. Best's issues also credit ratings: either investment grade or non-investment grade. A credit rating refers to the likelihood of payments on the debt securities. A short maturity bond backed by a mortgage on the insurer's property is likely to meet its coupon and principal payments, even if the insurer has a doubtful ability to pay long-term claims obligations.

| *Investment grade* | | *Non-Investment grade* | |
|---|---|---|---|
| *Exceptional* | aaa | *Speculative* | bb+, bb, bb- |
| *Very strong* | aa+, aa, aa- | *Very speculative* | b+, b, b- |
| *Strong* | a+, a, a- | *Extremely speculative* | ccc+, ccc, ccc-, cc, c |
| *Adequate* | bbb+, bbb, bbb- | *In default* | d |

A. M. Best's also rates short-term debt, such as commercial paper, with a simpler set of letter grades.

## *Appendix B: History and Growth of the Rating Agencies*

Credit ratings provide information to help investors determine whether issuers of debt will be able to meet their obligations. Rating agencies provide objective analyses and independent assessments of companies and countries that issue debt. Increasingly diverse debt securities and complex multi-national firms issuing them requires investors to understand the risks of many countries and asset types. Most creditors do not have the requisite expertise, and the influence of the major rating agencies has burgeoned.

The three major U.S. rating agencies began in the late 19th century to aid investors in corporate securities. Poor's *History of Railroads and Canals in the United States* (1860) first analyzed company financial strength. Standard Statistics, formed in 1906, published corporate bond, sovereign debt and municipal bond ratings. It merged with Poor's in 1941 and was acquired by McGraw-Hill in 1966. Standard and Poor's also produces stock indices such as the S&P 500, which are used for derivatives trading and as stock market indicators.

John Moody began publishing manuals providing statistics and information about stocks and bonds of various industries in 1900. Moody's Investors Service, begun in 1914, rated government bonds. By the 1970's Moody's was rating all corporate and sovereign debt. Fitch began in 1913 with stock and bond manuals of financial statistics. Fitch introduced the letter ratings of bonds now used by all agencies: AAA for highest grade through D for default. It merged with several competitors (IBCA, Duff & Phelps, Algorithmics) to form a diversified advisor for enterprise risk management and data services.

A. M. Best's was founded in 1899, issuing reports and financial strength ratings about life and property-casualty insurers. A. M. Best's rates 95% of insurers by premium volume.[16] It publishes voluminous reports each year assessing all life and property-casualty insurers. It has provided claims paying ratings since 1906 and credit ratings since 1999. Its monthly trade magazine, *Best's Review*, keeps it well known among insurance industry personnel. Its comprehensive surveys of insurers, monthly trade magazines with both articles and ratings, and low costs gave it a *de facto* monopoly on insurance ratings until the 1990's. Almost all insurers still take Best's ratings, though large insurers often have ratings from other agencies as well.

S&P, Moody's, and Fitch began as credit rating agencies; Best's began by rating insurers' overall financial strength (claims-paying ability). All rating agencies have since become full-service raters, though Best's still services only insurers and some other financial institutions, and the other agencies differ in their market shares by country and type of debt (corporate vs sovereign).

Before 1970, investors (not bond issuers) paid for publications of ratings agencies. But information spreads rapidly in efficient capital markets. Rating agencies realized that good ratings reduce the cost of debt and they could charge bond issuers for this value. Similarly, insurers pay for their own financial strength ratings.

In the 1970's, the Securities and Exchange Commission (SEC) imposed capital and liquidity requirements on securities owned by banks and other financial institutions. The major rating agencies were designated nationally-recognized statistical ratings organizations (NRSRO) by the SEC, and financial institutions could satisfy their capital requirements by investing in securities with favorable ratings by an NRSRO.

The advent of non-investment grade bonds in the late 1970's, the increase in sovereign debt since the early 1980's, requirements for ratings, and SEC approvals of the major agencies led to extraordinary growth of the rating agencies. In 1940-1970, only 0.1% of corporate debt defaulted. The debt was all investment grade and the U.S. economy grew steadily. Creditors did not require ratings to provide capital. By 2010, much corporate debt is below investment grade and world sovereign debt is enormous. Some countries (Argentina, Russia) and large firms have defaulted on their debt, and ratings are now essential to secure new loans.

Despite calls for reform of the rating agency market, both investors and debt issuers generally support the current structure. Debt has become an important part of corporate and sovereign activity, and rating agencies assess its quality.

The rating agency market has grown enormously over the past 30 years, for several reasons: High yield bonds have enabled even weaker firms to issue debt; government borrowing has increased enormously with little concern for repayment ability, leading to vast debt by poorly rated entities; more complex indentures require expert evaluation of bond risks. Fifty years ago, most new corporate debt was investment grade, and ratings were not essential. Now bond issues range from triple A to B-, and without a rating, the bond can not be sold. Fifty years ago, ratings were sought by publicly traded U.S. firms; European firms used bank loans, and they were evaluated by the banks. Now firms throughout the world issue debt. Sovereign entities, including weak states with no histories of debt repayment, finance budget deficits by publicly held debt. Ratings are essential for estimating default probabilities, since fiscal statements of some countries are not well-supervised.

Ratings are paid by firms being rated, not by investors using the rating, leading to potential conflicts of interest. A rating agency that downgrades its clients may lose their business. The failure of rating agencies to identify risks leading to the insolvency or government bailout of several banks and insurers are cited as evidence that they do not properly assess risk and financial strength. About 93% of AAA-rated subprime-mortgage-backed securities issued in 2006 fell below investment grade by 2010 (New York Times, April 25, 2010). The rating agencies received millions of dollars for these ratings from the issuing firms.

Despite the market growth, the same rating agencies have dominated the industry for the past century. The leading U.S. agencies rate firms and sovereign entities worldwide. Some people say more competition would reduce rating agency costs and lead to better risk assessments. The lack of product diversification and the ease of rating are conducive to a competitive market. But rating agencies may be natural monopolies, similar to municipal utilities of the mid-20$^{th}$ century. It is not clear that small agencies could survive in this market. Large agencies have strong reputations, helping them attract clients and forming powerful barriers to entry.

Potential conflicts of interest by rating agencies and the failure to foresee some insolvencies raise questions about the efficiency of rating agencies. Standard and Poor's, Moody's, and Fitch rate firms, states, and sovereign entities throughout the world.[17] Most large firms no longer operate in a single country, and non-insurance debt ratings entail analysis of global operations. The three U.S. agencies dominate the ratings market for multi-national firms.[18]

Entry into the rating agency market is hard. Ratings have little value unless they are widely accepted. A group of financial analysts might produce excellent ratings, but no client would pay to be rated until the agency is

established, giving established agencies strong advantages. Agencies' greatest asset are their reputations for accurate valuations and integrity. Firms already rated by Moody's and S&P don't want to pay for a third rating and don't want to give up either of their current ratings. New agencies with no reputations can not persuade investors that their ratings are accurate. Market leaders have remained since inception.[19]

Most corporate debt receives similar ratings from the agencies. The agencies' ratings are calibrated to the same levels: an A rating from S&P has similar meaning as an A rating from Moody's.[20] Rating agencies use the same data and provide similar services: public accounting statements and voluntary disclosures by their clients.[21] Ratings conform to market information: a client with a rising stock price will get a favorable rating from any agency. By law, rating agencies must disclose their ratings methods, as they now do on web sites. Academic studies find few differences in ratings techniques among the agencies. Innovations by one agency are copied by the others.

National regulation affects the rating agency market. The Basel II agreement allows banks to use ratings from approved rating agencies to calculate reserve requirements. The U.S. Securities and Exchange Commission permits investment banks to use credit ratings from Nationally Recognized Statistical Rating Organizations (NRSRO's) for creditworthiness regulations. Until 2007, Moody's, S&P, and Fitch were NRSRO's, along with three specialized agencies. Present law treats all rating agencies equally, but the three large agencies already dominate the market.

### *Appendix C: Efficiency and benefits of rating agencies*

Until recently, rating agencies were seen as judges of credit worthiness whose analysis of bond issues or of firms' financial strength move markets. Some recent insolvencies of well-rated firms and some ratings down-grades on sovereign debt have led to public debate about the efficiency and benefits of rating agencies.

The 2002 Enron insolvency and the government bail-out of AIG in 2009 illustrate the different perspectives. Credit rating agencies do not always downgrade companies promptly. Enron had investment grade ratings until four days before it went bankrupt, though agencies may have known already of the company's problems.[22] In 2007, AIG was the largest commercial insurer in the world, with operations in scores of countries and over $100 billion of assets. It had triple A ratings from all agencies until it suddenly went bankrupt from excessive financial risk in 2008 and was bailed out by the U.S. government. Some people question whether agencies knew about the risks and failed to inform the public or were oblivious to billion dollar risks that destroyed firms.

Empirical studies indicate that bond yields rise as credit quality falls before the rating agencies downgrade the bonds. Markets composed of investors with no access to private firm information may be more efficient than agency analysts meeting with corporate management and reviewing proprietary documents. The value of credit ratings to investors and bondholders is unclear.[23]

Losses on subprime mortgages in 2007-08 highlight the doubts about rating agencies. In an April 2010 column in the New York Times, Paul Krugman pointed out that 93% subprime mortgage-backed securities rated triple A in 2006 fell below investment grade by 2010.[24]

*Agencies rank risk; they do not guarantee solvency.*

Hindsight ratings are easy and infallible. Insolvent insurers reveal inadequate reserves, speculative investment strategies, poor reinsurance arrangements, or weak underwriting standards. After each insolvency, one hears: *Why didn't the rating agencies uncover the problems?*

Insurers continually assume risks. They underwrite policyholders to screen out poor business and pool risks to quantify expected losses, but they do not eliminate the risks. Economic returns require firms to take risks: even well-managed insurers earning reasonable returns face significant risks.

Rating agencies base their evaluations on limited information. Insurers may not disclose proprietary data that might lower their ratings, unless they expect the data to become public. An A rating means that the probability of ruin is acceptably low, not that the insurer can not fail. A rating agency with no insolvencies among its A rated clients is performing well if it has the same likelihood of giving an A rating as other agencies. If it avoids A ratings for all but the most secure insurers, it is not providing useful information to users of the ratings.

Ratings corresponding to the relative risk of insurers. Rating agencies rank insurers by their probability of ruin; they do not vouch for an insurer's solidity. An A rating may mean a 1% chance of insolvency over the next three years, not a guarantee of solvency.

Rating analysts seek recommendations that match ultimate committee actions. An analyst who is consistently above or below the committee actions learns to adjust the recommendations to the committee's standards.

*Rating agencies seek fair treatment of clients and strong reputations with investors.*

Rating agencies have two objectives: impeccable reputations for assessing debt quality and financial strength, and equitable treatment of clients. When sovereign states are financially troubled, agencies are criticized in public forums whichever action they take. If they downgrade the country, they are criticized for contributing to its ills; if they don't downgrade the country, they are criticized for misleading the public. Financial ratings of insurers present the same dilemma: no ratings philosophy satisfies all critics.

Both extremes – no high ratings unless default is impossible and no downgrades unless default is certain – are poor business strategy. Giving high ratings only if the client is immune from risk doesn't serve investors, regulators, or the public.

Rating agencies hesitate to reduce ratings too quickly. An insurer may slip below its current rating because of serious operational problems, and the agency must re-assess the insurer before it slips further, or because of temporary problems, and the insurer may curtail its writings or reinsure parts of its portfolio. Sometimes the slippage reflects a new rating analyst or new members of the rating committee with different perspectives. A rating agency that downgrades insurers only to reverse the decisions later loses the goodwill of its clients, who may switch to competing agencies with more stable ratings. Slow ratings changes reflect business strategy, not poor assessments of risk.

Agencies use ratings outlooks and watch lists to avoid erroneous rating changes. A watch list means a rating change may soon occur, but the reasons are still vague. Agencies may place insurers on watch lists after large acquisitions; the rating may rise if greater market share leads to more profitable business and it may fall if the acquisition costs exceed the realized benefits. Outlooks reflect the agency's expectations. Ostensibly, a negative outlook means that trends in the insurer's operations or its environment may lead to a downgrade. In practice, a negative outlook may mean the insurer has fallen to a lower rating level, but the agency delays action for several months to verify the lower rating or to give the insurer time to correct the risks. An evaluation of ratings efficiency must consider outlooks, watches, and the potential harm of precipitous ratings changes.

Patterns of rating changes are examined by serial correlations. If agencies react promptly to new information, and downgrades occur as soon as the insurer falls below a given solvency threshold, then downgrades should be followed more often by upgrades than by a second downgrade. If rating agencies wait to issue downgrades until the insurer is well below a threshold, rating changes may be positively serially correlated.

*Illustration:* Agencies use sophisticated quantitative and qualitative scores that are weighted and mapped to letter ratings. For simplicity, suppose financial strength is ranked from 0 to 100, with 96-100 being AAA, 91-95 being AA, 86-90 being A, and so forth. Insurers move stochastically along the scale: an insurer rated 87 in 20X1 might be 85 or 89 in 20X2. If rating agencies downgraded insurers as soon as they crossed a threshold, then insurers downgraded from AA to A in 20X2 have ratings of 89 or 90. It is more likely that they rise above 90 in 20X3 than that they fall below 86. Letter rating changes should have negative serial correlations.

But if agencies do not downgrade insurers until they cross the mid-point of the rating level, an AA-rated insurer is not downgraded until it falls below 88. Insurers downgraded to A in 20X2 have average ratings of 86 or 87. It is more likely that they fall below 86 in 20X3 than that they rise above 90. Letter rating changes should have positive serial correlations. In some cases, the agency gives the insurer a negative outlook without changing the letter rating. An insurer that has dropped to 87 or 88 may retain its AA rating with a negative outlook. In contrast, capital markets (bonds for debt ratings; common stock for financial strength ratings) respond rapidly to new information.

Observed serial correlations are positive, indicating that the agencies change ratings only when the upgrade or downgrade is certain, long after bond markets change credit spreads. Good business practice explains the lag: agencies want to avoid excessive rating changes for firms on the boundary between rating categories.

Agencies' lack of proprietary data is another reason for their slow response. Markets respond to hunches and gut feelings. If investors even suspect that a firm has problems, it stock price drops and its debt yield rises. Agencies can not act without supporting evidence. The AIG case shows this clearly. Even senior managers did not know the magnitude of the risks. AIG is a highly secretive firm, and rating agencies knew no more than other outsiders. Agencies rely on the integrity of their clients: they are analysts assessing risks, not detectives.

*APPENDIX D: RATING AGENCIES EXERCISES*

The exercises below may help students understand the reading. However, these exercises are not necessarily representative of possible exam questions.

Exercise 1.1: Insurer XYZ writes Homeowners coverage. Insurer ABC writes life annuities funding structured settlements for accident victims, many of whom are minors. A judge has ruled that an insurer needs an A rating from a nationally recognized rating agency to fund structured settlements.

A. Why are ratings important for Homeowners insurers?
B. Why are ratings important for writers of life annuities funding structured settlements?
C. For which insurer is operating performance most important and for which is balance sheet strength most important?

*Part A:* Banks providing mortgages generally require Homeowners on the property. Sometimes the bank is the payee if the home is destroyed by a covered peril, up to the amount of the remaining mortgage. If the insurer is insolvent, the insurance protection does not safeguard the bank. A hurricane or other catastrophe may bankrupt a weakly capitalized insurer, so banks may require coverage by a well-rated insurer.

*Part B:* A minor receiving a structured settlement receives payments by the insurer for many years (perhaps a lifetime), but does not choose the insurer funding the structured settlement. A weakly capitalized insurer may become insolvent during the term of the structured settlement, which may extend for the life of the minor. A high rating safeguards the interests of the minor.

*Part C:* Balance sheet strength is more important for the Homeowners insurer. The bank is concerned that the insurer can indemnify the homeowner for the damage this year, not that the insurer will stay around for many further years. Operating performance is more important for the writer of life annuities funding structured settlements, since the insurer must stay around for many years.

Exercise 1.2: The ratings meeting is like a poker game at which neither side exposes its cards.

A. Why does the rating agency not disclose its impressions from publicly available data?
B. Why might the insurer's failure to disclose adverse information lead to a downgrade?
C. How does the ratings process affect the insurer's decision about what data to disclose?

*Part A:* The rating agency wants the insurer to believe it has better information than it actually has. Publicly available data are sparse; the rating agency often lacks information about critical parts of the insurer, such as its asbestos and environmental exposures. By not disclosing what data they already have, rating agencies force insurers to supply proprietary data for all parts of the company.

*Part B:* Management integrity is an important rating criterion. Rating agencies rely on proprietary data supplied by insurers. If the insurer is dishonest on one topic, the agency fears it is dishonest on others, and it may lower the rating.

*Part C:* The lead analyst gives a ratings proposal in a presentation to the ratings committee, supported by the data received from the insurer. The insurer has no opportunity to provide more data to the ratings committee, so it makes sure the lead analyst has all the data that might be requested by the committee.

Exercise 1.3: An insurer has a 2:1 premium to surplus ratio and 4:1 reserves to surplus ratio. How do each of the following affect a rating agency's view of the leverage ratios? For each item, explain why a rating agency might look favorably or unfavorably on the asset or liability. Specifically, how does the asset or liability affect the insurer's claims paying ability in adverse scenarios?

A. Goodwill from a recent acquisition.
B. Deferred tax assets.
C. Surplus relief from quota share reinsurance.
D. Holding company debt that appears as equity in the insurer's Annual Statement.
E. Catastrophe bonds.

*Part A:* Goodwill is an asset on both statutory and GAAP balance sheets, reflecting the excess of the price paid for a subsidiary over its book value. Many acquisitions do not provide returns that justify their costs. (Half to two thirds of acquisitions turn out to have negative net present values.) Rating agencies view acquisitions critically: unless the promised benefits are likely to be realized, a large acquisition may lead to a negative outlook for the insurer. Goodwill may be excluded from surplus to evaluate the leverage ratios.

*Part B:* Deferred tax assets assume a going-concern with future taxable income that can be offset. Adverse scenarios leading to financial distress often eliminate taxable income, reducing the value of the deferred tax assets. Rating agencies may give little value to DTAs. The deferred tax asset may be excluded from surplus to evaluate the leverage ratios.

*Part C:* NAIC financial exams and IRIS tests may not give full value to surplus relief. Surplus relief offsets the surplus strain in statutory accounting. GAAP and fair value accounting do not penalize insurers for surplus strain. Rating agencies consider economic values of insurers, not just statutory values, so they have no reason to exclude surplus relief when computing leverage ratios.

*Part D:* Holding company debt appears as equity on the insurer's books, but it is a fixed charge paid from the insurer's income. Rating agencies evaluate the full debt of the insurer, whether it is issued through a holding company or an affiliate. Rating agencies may compute leverage ratios to equity only.

*Part E:* Catastrophe bonds can offset major losses. The potential value of the bond is an off-balance sheet asset. Rating agencies may add part of the bond payment to surplus when evaluating leverage ratios for catastrophes.

Exercise 1.4: Rating agency XYZ gives 40% of its client A- ratings or better, and their probability of ruin over the next five years is 4%. Rating agency ABC give A- ratings or better to 20% of its clients, who have a 2% probability of ruin over the next five years.

A. Is ABC better or worse at rating insurers than XYZ?
B. What is a possible effect of ABC's rating philosophy on its market share?

*Part A:* Neither rating agency is better or worse at rating. The quality of a rating depends on its consistency. The ratings given by different analysts on the same agency should be the same, but different agencies often have different meanings for a rating.

*Part B:* ABC gives fewer high ratings. Insurers who would receive an A- rating from XYZ and a lower rating from ABC are likely to choose XYZ. As a result, agencies tend to have similar ratings. But the ratings are not identical; some agencies give consistently higher or lower ratings than others.

Exercise 1.5: Firms in other industries seek ratings if they issue debt or are publicly traded. Most insurers have no debt and are not publicly traded, yet almost all insurers are rated. Many insurers have ratings from two or more agencies, despite the high cost of ratings.

A. Why are ratings so prevalent in the insurance industry?
B. Which insurers most need ratings?

*Part A:* Other firms sell products or services. Consumer can evaluate the products in stores and read reviews by previous buyers on internet web sites or consumer magazines. Insurers sell promises, whose worth is not known for many years. Most consumers can not themselves evaluate insurers; even insurance agents and banks providing mortgages can not always identify high risk insurers.

*Part B:* Insurers providing coverage that benefit third parties, such as banks providing mortgages, suretieswho guarantee completion of a construction project, or writers of life annuities supporting structured settlements, pay for ratings to assure others that they can fulfill their promises. Sophisticated consumers (large commercial policyholders and primary insurers for reinsurance) also seek insurers with good ratings.

Exercise 1.6: Tens of thousands of firms throughout the world need ratings each year. Most of these firms are rated by one of the three major U.S. rating agencies.

A. Why is the ratings industry dominated by three firms?
B. Why might three firms (instead of 30) create a more efficient ratings process?

Exercise 1.7: Whether ratings affect bond yields or bond yield changes precede rating changes is unclear.

A. Why might one presume that ratings affect bond yields?
B. Why might one presume that bond yield changes precede rating changes?

Exercise 1.8: The ratings process

A. What are the roles of the ratings analyst and the ratings committee?
B. What information does the rating agency seek to obtain from interactive meetings?

Exercise 1.9: ABC, an East Coast reinsurer, is preparing an offer to acquire XYZ, a West Coast reinsurer. It expects costs savings from the acquisition, and it offers a substantial premium over XYZ's market price.

A. How might a rating agency view the acquisition?
B. What qualitative items might the rating agency be most concerned about?
C. Why might ABC discuss the acquisition with its rating agencies beforehand?

Exercise 1.10: Rating agencies seek performance measures that are consistent among insurers. You are choosing between pre-tax and after-tax earnings as the measure of operating performance.

A. Why might pre-tax earnings be more consistent among insurers?
B. Why might after-tax earnings be more consistent among insurers?

C. How might one adjust pre-tax earnings to make them more consistent?
D. How might one adjust after-tax earnings to make them more consistent?

Exercise 1.11: Quality of earnings

A. What is meant by quality of earnings?
B. What attributes affect quality of earnings?

Exercise 1.12: ABC writes personal auto in 20 U.S. states. XYZ writes property excess-of-loss treaties for catastrophe risks of windstorms and earth movement. Both insurers have a 6% return on sales.

A. Which insurer has the higher return on capital?
B. How might the quality of earnings differ for these two insurers?

Exercise 1.13: A personal auto insurer targets retirement communities in the U.S. sun-belt. Many of its insureds are wealthy, but they drive less after moving to these communities. It is well-capitalized, with a 60% loss ratio, a 90% persistency rate, and a return on surplus over 20% for the past five years. Rating agencies have kept the insurer at a B+ rating, citing risks of a single line of business subject to underwriting cycles and a small niche market that may be threatened by peers. The insurer is seeking to diversify. Explain the costs and benefits of each of the following.

A. Expand into Homeowners coverage, with a package policy for personal auto insureds.
B. Expand into standard and sub-standard auto risks, with discounts for children of current policyholders.
C. Expand into Medicare supplement policies for residents of the retirement communities.
D. Expand into medical malpractice coverage for physicians serving the retirement communities.

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Enterprise risk management

S&P: Principles of corporate ratings
Analysis of non-life insurance operating performance
Assessing loss reserves
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Financial flexibility and capital structure
Interactive ratings methodology
Analysis of insurer capital adequacy

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*ENDNOTES*

[1] Corporate charters of some pension funds and similar institutional investors specify investments in bonds rated *investment grade* (BBB) or higher. Non-investment grade bonds (rated BB or lower) have higher default-adjusted yields (= the yield net of expected losses from defaults), indicating lower demand for these bonds..

[2] Plaintiffs’ attorneys often demand an A- or higher rating for the insurer providing the annuity that funds the structured settlement.

[3] The predictive accuracy of ratings is less relevant than their acceptance by investors. Even if an agency’s decision is contested by other analysts, the agency’s decision retains its effect on coupon rates if bondholders respect the decision.

[4] Insurers’ indirect costs to secure high ratings include reinsurance to transfer risks, non-renewal of policies to reduce business volume, and internal ERM models to demonstrate a commitment to effective risk management. An insurer may cede a large portion of its property writings to reduce catastrophe risk in rating agency capital models, giving up expected profits for a higher rating. Some critics suggest that rating agencies hint of potential downgrades to induce insurers to pay for interactive ratings. For example, an insurer with A- ratings from two agencies may pay for interactive ratings from only one. The other agency informs the insurer that it may reduce its rating to B+, but that evidence of good corporate governance would keep the A- rating. The insurer may pay for an interactive rating to demonstrate its corporate governance and keep its A- rating.

[5] See Koresh [2003], Kliger and Sarig [2000], Langohr and Langohr [2009], and Levich, Majnoni, and Reinhart [2002].

[6] Critiques of rating agency activities are reviewed later in this reading.

[7] Firms in other industries can keep their finances private; insurers provide extensive public information in statutory Annual Statements. Most insurers find it more efficient to pay for interactive ratings, with a chance to influence agency decisions, than to risk a public rating.

[8] Insurers may choose initially not to be rated by a particular agency, but they rarely cease being rated by the agency for fear of a downgrade in a public rating.

[9] Analysts for insurance company ratings may work entirely with insurers, so they have enough experience to assess their clients’ qualities.

[10] State regressions examine the financial condition of all licensed insurers every three to five years. These financial examinations are more expensive and intrusive than rating agency valuations, and insurers seek to minimize the cost. Whereas a rating agency sees only data voluntarily provided by the client, state regulators often request records that the insurer might not wish to expose. Rating agencies spend two or three weeks analyzing the client; a state financial examination lasts months. State regulators do not require a commercial rating, but an unrated insurer may receive a more thorough exam.

[11] The importance of commercial ratings is clear from advertisements in trade publications. Both insurers and reinsurer emphasize their ratings in ads geared to agents or primary insurers.

[12] Actuaries once used models to evaluate the financial strength of reinsurers. But the effort and expertise needed to build the models, and the uncertainty in models based on public information alone, cause most primary insurers to rely on the commercial ratings.

[13] Most insurers that did not renew Scor Re treaties probably based their decisions on the rating downgrade.

[14] Agencies are sensitive to criticisms that ratings are influenced by the desire tor retain profitable clients.

[15] The impetus for principles-based solvency monitoring systems stems from the European Union's Solvency II directives, which the NAIC is now also evaluating. Standard and Poor's presumes that insurers will develop economic capital models to satisfy the new regulatory regimes, and they can assess an insurer's financial strength from its ERM models.

[16] The remaining 5% are mostly small or young insurers who do not meet Best's size or age criteria.

[17] S&P and Moody's have 80% of the U.S. rating agency market; together with Fitch, they have about 90%.

[18] Other rating agencies operate in foreign countries. Many foreign insurers operating in a single country are rated by country specific rating agencies.

[19] Suppose an insurer is rated A- by S&P and Best's. A new agency approaches the insurer offering a more sophisticated rating system. If the new agency gives more favorable ratings, it won't affect investors and agents who rely on the rating agencies they are familiar with. If the new agency gives less favorable ratings, it won't attract clients. The rating agency industry may already be saturated.

[20] Insurance ratings by A. M. Best's are somewhat higher (on average) than those from the other agencies, but the differences are slight.

[21] Rating agencies do little proprietary financial research. It is less expensive to use published research by leading academics than to hire private researchers. The best analysts prefer work at universities where they publish freely than at private firms that own all their work.

[22] See Amy Borrus, "The Credit-Raters: How They Work and How They Might Work Better," *Business Week*, April 8, 2002, and Edward Wyatt, "Credit Agencies Waited Months to Voice Doubt About Enron," Georgetown University, February 8, 2002).

[23] D. Kliger and O. Sarig (2000), The Information Value of Bond Ratings, *Journal of Finance*, December: 2879-2902; Koresh Galil (2003). The quality of corporate credit rating: An empirical investigation. *EFMA* 2003 Helsinki Meetings. European Financial Management Association.

[24] Krugman infers that rating agencies are corrupt. He infers that the agencies began as market researchers, selling assessments of corporate debt to investors. Eventually they morphed into something quite different: companies that were hired by the people selling debt to give that debt a seal of approval. Few economists agree with this analysis; this reading presents the interpretations without supporting any of them.

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Financial Services Commission of Ontario, "Private Passenger Automobile Filing Guidelines–Major," October 2016, pp. 1-5 (excluding filing format), 11-21 (starting from Section 3), and Appendix B2.

Due to copyright restrictions, please use the following link to access the files:

https://www.fsco.gov.on.ca/en/auto/filing-guidelines/Documents/PPA-major.pdf

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# Financial Services Commission of Ontario

## *Technical Notes for Automobile Insurance Rate and Risk Classification Filings*

### A. Introduction

All insurers writing non-fleet automobile insurance on Ontario Automobile Policy (OAP 1) or Ontario Driver's Policy (OPF 2) must have their rates and risk classification systems approved or authorized by the Financial Services Commission of Ontario (FSCO). The legislation provides that an application (filing) for approval of rates and a risk classification system shall be in a form approved by the Superintendent and shall be filed together with such information, material and evidence as the Superintendent specifies. These *Technical Notes* form part of the Filing Guidelines, and are to be considered in conjunction with them.

For the purposes of these *Technical Notes*, the terms "FSCO" and "Superintendent" are used interchangeably to mean "the Superintendent of Financial Services".

Also, **bolded and underlined** sections of the *Technical Notes* must be viewed as critical issues that insurers must adhere to when submitting filings.

There are five different Rate and Risk Classification *Filing Guidelines* depending upon the types of changes proposed.

1. ***Private Passenger Automobile Filing Guidelines – Major:*** to be used when an insurer is initially entering the private passenger automobile insurance market, or is changing existing automobile insurance rates but the changes proposed do not meet the criteria for the *Simplified Filing Guidelines.* Where rates for other categories of automobile insurance are dependent on the private passenger automobile rates (e.g., motorhome rates are dependent on private passenger rates), they must be included within the filing. **These Filing Guidelines are to be used by the Facility Association for all categories of insurance.**

2. ***Private Passenger Automobile Filing Guidelines - Simplified:*** to be used when the insurer is filing for changes to private passenger automobile insurance rates or risk classification systems and the changes proposed meet the criteria as set out in **Exhibit 1** of the *Technical Notes*. Where rates for other categories of automobile insurance are dependent on the private passenger automobile rates (e.g., motorhome rates are dependent on private passenger rates), they must be included within the Simplified filing.

3. ***Private Passenger Automobile Filing Guidelines – CLEAR Simplified:*** to be used to implement the current year CLEAR vehicle rate group (VRG) table.

4. ***Other Than Private Passenger Filing Guidelines - Major:*** to be used when an insurer is initially entering the insurance market for a category other than private passenger automobile insurance or when changes proposed meet the criteria set out in **Exhibit 3 of the *Technical Notes*** or when requested by FSCO to use it. Where rates for a category of automobile insurance are dependent on the rates of another category (e.g., public vehicle rates are dependent on commercial vehicle rates), they must be included within the filing.

5. ***Other than Private Passenger Filing Guidelines - Minor*:** to be used when the insurer is filing for changes to automobile insurance rates or risk classification systems for other than private passenger (e.g., insurer is filing for motorcycle rates). Where rates for a category of automobile insurance are

dependent on the rates of another category (e.g., public vehicle rates are dependent on commercial vehicles rates), they must be included within the filing.

When proposing rate or risk classification changes, insurers must also have regard to Superintendent's Bulletins that may be issued from time to time. Bulletins are listed on FSCO's website at: *www.fsco.gov.on.ca*.

### B. Requirement to File

Section 7 of the *Automobile Insurance Rate Stabilization Act*, *2003* allows the Superintendent to order any insurer to apply to the Superintendent for approval of the risk classification system and the rates it intends to use for all coverages of the Personal Vehicles — Private Passenger Automobile category of automobile insurance.

The requirement to file rate and risk classification changes also includes the following:

1. where an insurer is proposing to use Insurers' Advisory Organization (IAO) advisory rates;

2. where an insurer is updating vehicle rate groups (refer to E8. Rate Group Drift and E18. Vehicle Rate Group Changes in the *Technical Notes*);

3. where an insurer is changing rates for categories of automobile insurance that are dependent on another category of automobile insurance (e.g., public vehicle rates that are dependent on commercial vehicle rates);

4. interim and annual anniversary Usage Based Insurance Pricing Program reports (Refer to E20 of these *Technical Notes*);

5. annual anniversary rate capping reports (refer to E22 of these *Technical Notes*).

If an insurer uses rates or risk classification systems that are not approved or authorized by the Superintendent, it may be subject to regulatory action by FSCO.

### C. Filing Documentation

In general, documentation must be in sufficient detail to enable the reviewer to trace the resulting rates from the raw data experience and other supporting data. If market analysis information is used by the insurer in developing the proposed changes, this information must be provided within the filing. For more specific details, please refer to the appropriate *Filing Guidelines*. **Failure to provide documentation, as outlined in the *Filing Guidelines*, will result in the filing being deemed incomplete, and delay review and approval of the filing.**

### D. Reviewing Rate Adequacy

Insurers should regularly review the adequacy of rates for **all** categories of automobile insurance so that consumers are less likely to experience large rate changes.

It is suggested that you plan your rate filing activities in advance, to avoid having more than one rate filing under review for a specific category at any one time. FSCO will not begin reviewing another submitted rate filing, until the most recent submission is approved.

The legislation requires that all risk classification systems be just and reasonable, reasonably predictive of risk, and distinguish fairly between risks. Also, under legislation, rates must be just and reasonable, not impair the solvency of the insurer, and not be excessive in relation to the financial circumstances of the insurer.

## E. Major Filings

Outlined below are specific components to take into consideration when preparing your rate filing where full rate level indications are required. The references are to the appropriate sections of the *Private Passenger Automobile Filing Guidelines - Major.*

### 1. Loss Data (4.b.)

a) The insurer's own current direct (i.e., prior to reinsurance transactions) loss data must be provided, otherwise the filing will be deemed incomplete. Losses covered by policy endorsements should be excluded (except for OPCF44R).

b) The insurer's own loss data must be used to the extent that it is credible.

c) Loss data must be Ontario specific for the filed category of insurance at the coverage level. Valuation data for loss reserving purposes may not satisfy this requirement.

d) Data at the major sub-coverage level is generally required for estimating ultimate costs. Aggregation will be required to estimate the required change in rates.

Loss experience *should be subdivided at the major sub-coverage level as follows with consideration given to homogeneity and credibility of the data. The following are the major sub-coverages in the Loss Development Exhibits of the GISA Automobile Statistical Plan. Finer break-down of loss experience may be determined to be more appropriate.*

TPL - bodily injury
TPL - property damage
TPL - direct compensation - property damage

Standard Accident Benefits
AB – Funeral
AB – Death Benefits
AB – Medical
AB – Rehabilitation
AB – Disability Benefits
AB – Supplementary (Quebec Excess Benefits)

Uninsured automobile

Collision

Comprehensive

All perils

Specified perils

Family Protection (OPCF 44R)

e) For each coverage and major sub-coverage listed above, payment patterns must be developed for discounting purposes.

f) The filing must use the most recent ratemaking data that is available. Accident full year and accident half-year loss development data on an industry-wide basis is generally

available in May and early November, respectively.

g) Insurer automobile experience under the General Insurance Statistical Agency Automobile Statistical Plan (ASP) is generally considered to be appropriate for ratemaking purposes. Insurers that rely on alternative data sources should be able to reconcile closely with the insurer's Actual Loss Ratio and Loss Development Exhibit produced from the ASP as of a common evaluation date. Such insurers are required to provide a copy of the ASP exhibit data to demonstrate that the ratemaking data is reasonably accurate to support rate changes. If the data does not reconcile closely to the insurer's ASP exhibits, explanations will be necessary. This may delay the filing review process.

**2. Loss Development (4.b.1.)**

a) The insurer must not solely use industry factors, unless the insurer can support why those factors are more appropriate than basing loss development on its own data.

b) If loss development for a partial accident year is used, then comparable experience at the same level of maturity must be provided to support the selected loss development factors.

**3. Loss Trend (4.b.2.**)

a) Loss trends are usually based on industry-wide experience. Loss trends based on the insurer's own experience may also be useful in better understanding the dynamics of the insurer's business.

b) Selected loss trend assumptions must be supported with an analysis of the indicated loss cost changes using an appropriate loss trend methodology. Loss trend assumptions that do not follow the indicated loss trends must be rationalised and explained.

c) Estimation of loss trend rates may be impacted by data exclusions due to data issues identified in GISA exhibit reviews. Use of GISA exhibit data without consideration of the cautionary notes in the exhibit could result in inappropriate loss trend rates used in filings.

d) Loss cost trends are generally sufficient. However, frequency and severity trends are often reviewed and analysed separately in the selection of trend factors.

e) Regulation changes could results in loss trend rates that are expected to be materially different from past loss trend rates. To assist with filings, past and future loss trend factors are provided as a reference in **Exhibit 2.**

**4. Treatment of Large Losses (4.b.3.)**

a) The filing must clearly indicate how large losses in the experience period have been handled. If losses have been capped, a description of the large loss procedure and the effects of the caps must be demonstrated.

b) A long period must be used in estimating the large loss provision to minimize statistical variations over years.

c) Each insurer must ensure that large losses do not cause significant instability in the insurer's rates from one period to the next.

d) Loss development data on a capped basis should be provided to support the use of capped loss development factors for the capped incurred loss amounts.

## 5. Catastrophe Provision (4.b.4.)

a) A catastrophe procedure is used to remove aberrations in the underlying loss data caused by infrequently occurring, multi-claim, weather-related events.

b) In the past we have considered a 2% loading on comprehensive coverage, the comprehensive portion of all perils coverage, and specified perils coverage, as a reasonable catastrophe provision.

## 6. Automobile Insurance Reform Adjustment Factors (4.b.5.)

a) The filing must clearly indicate how historical loss experience has been adjusted for insurance reforms for the period in which proposed rates will become effective.

b) To assist with filings, benchmark loss cost adjustment factors are provided as a reference for adjusting the pre-reform loss costs of a full period in **Exhibit 2**. Estimation of required loss cost adjustments for a mixed period (includes both pre and post reform loss costs) should be provided in the rate level calculations. FSCO's benchmarks are based on industry data which includes insurers with different risk profiles. These benchmark factors may be too high for some insurers and too low for others due to differences in risk profiles as compared to the industry. Insurers should consider the differences in the distribution of their own portfolio risks compared to the industry when providing support for their selected adjustment factors in their rate filings.

c) The January 2015 Changes factors are in respect of the changes to the prejudgment interest rate used in calculating court awards for non-pecuniary losses and amendments made to the Statutory Accident Benefits Schedule to change interest rates. These rates are subject to periodic adjustment as set out under the Courts of Justice Act. The January 2015 Changes adjustment factors in Exhibit 2 are based on a 1.3% interest rate assumption.

## 7. On-Level Premium (4.e.1.)

a) All premiums by coverage and territory used in the filing must be adjusted for previous rate changes. Endorsement premiums should be excluded.

b) If the extension of exposures method is used for determining the on-level premium, documentation must be provided to demonstrate how it compares to the parallelogram method.

## 8. Rate Group Drift (4.e.2.)

a) The gradual shift in the distribution of business to newer and more expensive cars results in increases in physical damage premiums. This must be explicitly reflected in deriving rate level indications. Otherwise, rate indications for certain coverages will be misstated.

b) The annual industry average changes in rate group differentials are determined and published by the Insurance Bureau of Canada (IBC). Insurers are still required to provide their rate group distributions to support the selected rate group drifts.

c) The rate group drift must be taken into consideration annually.

## 9. Finance Fees/Charges (4.e.)

Finance fees or charges collected through premium instalment plans must be included in premiums. Premium payment pattern may be adjusted for policies with premium instalment plans. This revenue must be included in the ratemaking methodology in the filing (i.e., by taking into account the effect of finance fee revenue on the rate level indication).

## 10. Tax Rates (4.e.)

a) Insurers should reflect the corporate tax rates expected to be effective for the period of the proposed rates, where applicable.

## 11. Expenses (4.f.)

b) Some general expenses may vary as a function of premiums or exposures, while others, such as salaries and rent, may follow inflation or other economic conditions.

c) A reasonable approach is to treat commissions and premium taxes as premium variable expenses and treat all other expenses as fixed expenses. Treating all general expenses as a variable of premiums is generally inappropriate. Fixed expenses are normally allocated to compulsory coverages. Some insurers may, through additional analysis, use a three-way split, which we have also found to be reasonable.

d) FSCO is unlikely to approve any filing that will pass through to consumers an expense provision, excluding unallocated loss adjustment expenses (ULAE) and excluding allocated loss adjustment expenses (ALAE), that is significantly higher than the industry average expense provision set out in **Exhibit 2**. As well, FSCO is not likely to approve filings where the ULAE varies significantly from the industry average.

e) It is FSCO's stated position that any expenses associated with reinsurance costs and any profit or loss effects from the residual market, cannot be included as an element of general expenses. This is explained in the filing guidelines.

f) There must be no expense provision established in respect of the Facility Association Residual Market, unless there is a known subsidy in its operation. Risk Sharing Pool must be treated as direct business and therefore must be reflected in the direct loss and premium data.

g) FSCO is unlikely to approve any filing that contains a contingent commission provision that is higher than the industry average.

h) FSCO is unlikely to approve any filing that contains a health levy provision that is different from that calculated in accordance with O. Reg. 401/96 – *Assessment of Health System Costs*.

i) Significant differences in expense provisions between that included in a rate filing and expense data submitted to GISA must be explained.

## 12. Underwriting Profit Provision

a) **Exhibit 2** of the *Technical Notes* includes the regulatory profit benchmark (expressed as a % of rate) for use in the development of the actuarially indicated rate. In general, the actuarially indicated rate is developed by the following ratemaking formula:

   I = (Expected Loss Cost + Fixed Expense) / (1 – Variable Expense Provision – Target UW Profit Provision);

   Where I is the indicated rate; both the Variable Expense Provision and Target UW Profit Provision are expressed as a % of premiums; all costs are discounted to reflect investment income on cash flows.

b) If the rate model develops an underwriting profit provision that is related to the cost of capital, supporting exhibits must be provided to support the calculation of the provision. The supporting exhibits must clearly present the assumptions and parameters employed in the model, and the

resulting target underwriting profit provision must be clearly stated.

c) FSCO is unlikely to approve a rate filing that passes along an underwriting profit that is greater than FSCO's benchmark on an all-coverages combined basis.

**13. Investment Returns and Cash-Flow Rate**

a) The rationale for assumptions must be made based on the current economic environment.

b) While expected investment returns should consider new money rates, we anticipate that the expected investment return will be close to the actual investment return the insurer earned within the recent past. Significant differences must be explained and justified.

**14. Credibility (4.h.)**

a) Credibility standards and the complement of credibility should be consistent from one filing to the next. Changes in either the standards or the complement of credibility must be outlined and justified.

b) Credibility standards must also be reasonable in the circumstances. The purpose of credibility weighting is to provide a balance between stability and responsiveness of an estimate. Standards that are too low may cause significant instability in the indicated rates. Those that are too high may reduce responsiveness of a rate change.

c) A commonly used standard of 1,082 claims for short tail, low severity coverages, such as property damage and physical damage, is considered reasonable. The use of a higher standard in long-tail, high severity coverages in the form of a multiplier of the base standard, is considered reasonable.

d) Due to the nature of Bodily Injury (BI) claims, the BI claim count must not be combined with the PD claim count to assess the credibility component of the Third Party Liability (TPL) experience data.

e) If prior filing indications are utilized in the credibility complement and significant differences have been communicated to the insurer regarding the indications, consideration must be given to adjusting the prior indication for these differences before utilizing it in the current credibility complement.

f) If an alternative body of data experience is used as a credibility complement, exhibits must be included to show the adjustments made to this data for risk distribution differences. Differences in loss costs or loss ratios due to differences in risk characteristics (other than distributional differences) between the data groups should be considered and adjusted where appropriate.

**15. Indicated Rate Changes and Proposed Rate Changes (4.j.)**

a) The indicated rate change should be based on at least three consecutive years of actual experience.

b) Proposed rate changes must be in the same direction as the indicated rate change direction at the coverage level. For example, if the indicated rate change for TPL-BI is positive and the indicated rate change for Standard AB is negative, we expect that the proposed rates for TPL-BI must increase and the proposed rates for Standard AB must decrease, even though both TPL and AB are compulsory coverages.

c) Significant differences at the coverage level between the indicated and proposed rate changes must be explained.

d) The data included in the experience period must be readily reconcilable with information provided in Appendix A of the insurer's filing.

e) It must be readily apparent how the investment income assumptions have been reflected in the calculation of the indicated rate change.

f) Both indicated and proposed rate changes must take into consideration the changes to coverages resulting from automobile insurance reforms.

g) Rationale and other considerations in support of the proposed rate changes must be provided.

h) **Insurers should regularly review their indicated rate levels and current rate levels for all categories of automobile insurance.**

**16. Territory, Class, Driving Record and Other Differential Changes (4.k. and 4.m.)**

a) In order to ensure rate equity and minimize rate dislocation, insurers must cap differential changes at +/-10% from the current differential in the direction of the coverage indication. The +/-10% is to be measured from the current differential after re-basing the average proposed differentials to the same average current differentials for each coverage as well as overall. This requirement applies in cases where the insurer is changing the territorial differentials due to changes to the territory definitions.

b) Overall dislocation should be carefully reviewed by the insurer.

**17. Territorial Definition Changes (4.k.3.)**

If an insurer is proposing to make territorial definition changes, the insurer must demonstrate that the following conditions are met:

- All newly formed territories are based on a minimum of three years of insurer data and at least 2,500 annualized average vehicles over the three-year period where a unique territory definition is proposed.
- There are no more than 55 territories in the Province of Ontario and no more than 10 territories in the City of Toronto.
- All territories consist of geographic areas that are contiguous i.e., have a common boundary.
- The rates for newly formed adjoining territories do not vary by more than ±10%.
- A common territorial definition is used for all coverages.
- Large claims should be capped in establishing territorial rates.
- When territorial definitions are changed due to the movement of Forward Sorting Areas (FSAs), the +/-10% for the proposed territory is measured based on the weighted average of the insurer's current territorial differentials for each coverage as well as overall.

Territorial definitions are part of an insurer's risk classification system. Where an insurer's approved territory definitions are based on postal codes, a further filing must be made and approved by FSCO to change the definitions based on postal code (e.g., a postal code change by Canada Post that results in a new postal code that lies outside of the boundary of an existing approved territory). An insurer

cannot change territorial rates without an approved filing because Canada Post has made changes to postal codes. A changed postal code that falls within an approved territory does not need to be filed with FSCO.

An insurer must provide coloured maps for all territories, even where a change of definition is being proposed for only one territory, setting out current and proposed territorial structures, including the territory names, as well as a physical description of the territory. The insurer must also indicate all of the FSAs that fall within that territory, if applicable. The insurer must be prepared to certify that the territories are contiguous and that the maps are accurate.

**18. Vehicle Rate Group Changes (4.l.)**

a) An insurer may use the Major or Simplified Filing Guidelines if changes to Private Passenger vehicle rate group differentials are being proposed.

b) Even if an insurer is simply updating the annual CLEAR vehicle rate group tables, the rate group drift must be taken into account.

**19. Predictive Models (4.m.)**

a) In a Generalized Linear Model (GLM) or Generalized Additive Model (GAM) or other analytical pricing methods, the model results must be summarized to include the earned exposures, number of claims, indicated loss costs or loss ratios, indicated relativities and re-balanced relativities.

b) Raw data results summarized on a one-dimension basis for the proposed classification variables must be readily available for review when requested.

c) Regression statistics such as the R-square, T-values, degree of freedom, correlation coefficient and standard of errors must be included to illustrate the statistical significance of the proposed variables.

d) Credibility of data and use of a credibility standard in the calculation of indicated relativities must be shown.

The following must be included in the filing:

- Segment and/or score must be clearly articulated.
- The score for each variable being used.
- A description of the data analysed and a list of all rating variables used in the analysis.
- A description of the training data used (e.g., 50% of the data).
- A description of the credibility procedures and selected credibility thresholds.
- A description of the coverage analysis performed (frequency, severity or loss ratio).
- A description of the validation data used (showing that the correlation between the training data and the validation data is greater than 90%).
- The loss ratio history or experience for each “bucket”.
- A description of the lift and the relativity between the highest segment differential and the lowest segment differential.
- The maximum number of variables and parameters being proposed (note that all are required to be statistically significant and may not contain any prohibited factors or be surrogates for a prohibited factor).
- A rationale for the final selection of variables and parameters.
- A brief description on the expectation or process for future filings (e.g., does the predictive model have to be re-run every time a rate change is made).

- FSCO must be able to determine the final rate change based on the risk factors as well as calculate and validate the premium calculation based on the details included in the filing.

- **20. Usage-Based Insurance Pricing (UBIP) Programs**

a) Initial Discount

Any UBIP discount must be filed with and approved by FSCO. An insurer may rely on non-Ontario data at the introductory stage of UBIP.

It is recommended that any initial discounts be conservatively set until such time as the Ontario experience emerges. Insurers should recognize that UBIP filings are more complex and may require a longer review time.

Insurers also are required to demonstrate that the underlying assumptions used in a UBIP program are reasonable and continue to be reasonable. The filing must clearly indicate:

- What driving behaviours are being measured (e.g., acceleration or deceleration rates, speed, distance travelled),
- how this data is measured (e.g., frequency, occurrence, relevant thresholds),
- how this data is normalized and categorized for rating purposes (e.g., total occurrences, averaged), and
- all relevant claim experience (e.g., claim severity, claim frequency and loss costs) that are needed to support the proposed UBI discount.

Any recalibration to the UBIP, including any updates or subsequent adjustment to UBIP algorithm, formula, event definition, capping and threshold, must be submitted to FSCO for formal approval.

**Conditional Approval (subsequent applications)**

FSCO will initially approve UBIP programs in Ontario on a conditional basis and will require insurers to file subsequent applications after gaining two years of experience in the Ontario market.

All approval orders for private passenger filings that include the introduction of a UBIP will contain conditions similar to these:

1. *The risk classification system and rates approved in connection with [Insurer Name]'s usage based insurance program trademarked as [UBIP trademark name] may be used only for new and renewal [UBIP trademark name] business with policy effective dates that are not later than [a date two years from approval date].*

2. *Continued use of the approved risk classification system and rates used in connection with the [UBIP trademark name] beyond the period described in paragraph 1 is not permitted, except as may be approved by FSCO in the event [Insurer Name] files a subsequent application for approval of the risk classification system and rates that [Insurer Name] proposes to use with the [UBIP trademark name] program beyond that period.*

3. *FSCO will require any subsequent application as referred to in paragraph 2 to include information, material and evidence demonstrating [Insurer Name]'s experience with the [UBIP trademark name] program as FSCO deems necessary in order to make a decision with respect to the application and [Insurer Name]'s continued operation of the [UBIP trademark name] program.*

**Any UBIP anniversary filings that do not contain actuarial support will continue to be approved on a conditional basis until such support is acquired by the insurer.**

**UBIP Interim and Anniversary Reporting Requirements (For PPA only)**

As part of the approval process, insurers will be notified that they are required to submit interim update reports to FSCO in the intervening two years (between approval and required resubmission). These reports will be required annually and in the format prescribed by FSCO.

The interim update reports will assist in tracking the experience with the insurer's new UBIP model, including adoption rates, average discounts, and any issues that the insurer has observed. This may include consumer feedback and complaints, issues with the selected variables or with the methodology used to calculate the discount.

b) Subsequent Filings

Initial UBIP models may first be reviewed and approved by FSCO in principle, following which an insurer would make a formal filing for formal FSCO approval. FSCO approval of the filing could be made conditional on further filings being required at scheduled intervals after the initial approval to provide the necessary continued support for the UBIP rating system, including a full description of any refinements that the insurer intends to make as it develops experience with the UBIP program as initially approved.

Where the enrollment discount is only offered for one term, or where the impact of the actual UBIP discount is expected to differ materially different from the enrollment discount, the insurer will be required to submit a report to FSCO (in addition to any other filings that are submitted) that will account for the change in the average UBIP discount and, as a result, the average rate level change that will flow from the discount, as at each anniversary of the introduction of the discount.

FSCO may also request insurers to submit rate filings for re-calibration to the UBIP to support the UBI discount when Ontario UBI experience emerges based on insurers' experience.

c) Form and Endorsement Requirements (see also *Forms Filing Guidelines*)

In Ontario the mechanism for adding new terms to, or amending existing terms of, the standard auto policy is by way of an endorsement form. Under the *Insurance Act* no auto insurer may use an endorsement form unless it has first been approved by FSCO.

FSCO will require insurers to file any form provided to the consumer to document the terms and conditions of participation in a UBIP program as an endorsement in accordance with section 227 of the *Insurance Act* in order to have it subject to a review and formal approval by FSCO. This will ensure that both FSCO and the consumer are aware of what and how the consumer's personal information will be used.

d) Treatment of UBIP Program Costs and Expenses

Insurers must clearly demonstrate the up-front or start-up costs associated with developing and introducing a UBIP program, as well as all ongoing maintenance and other expenses associated with offering the program, including but not limited to all costs associated with the UBIP device, data transfer and analysis, marketing and any third party provider contracts.

The insurer must include this information in a filing regardless of whether the insurer has factored this cost into the rate assumptions. Some insurers may treat start-up costs as part of research and development and not specifically allocate them. It is expected that over time the on-going operational costs should be taken into account in determining the discount. FSCO will be sensitive to the allocation of these expenses and the issue of UBIP costs being borne by policyholders not participating in the program.

## 21. Introduction of New Discounts/Surcharges or Differentials

a) Insurers may have innovations in pricing auto insurance through the introduction of new discounts/surcharges and differentials. Data should be provided in support of a new discount/surcharge or differential. FSCO will consider non Ontario data, provided it is credible and relevant to the current Ontario product.

b) If an insurer is proposing to adopt a discount/surcharge or differential that is in use by other auto insurers in Ontario, it must provide the supporting information, i.e., the names of the insurers and the level of the discount/surcharge or differential, within the filing.

c) Once the new discount is approved, to ensure stability in the market, it must be in existence for at least three years before the insurer can withdraw it from its risk classification system. Insurers must collect data and, once sufficient data has been gathered, be prepared to amend the discount/surcharge or differentials accordingly.

d) Multi-line discounts (auto and property) should not be applied to the automobile policy until the property policy is effective. Where an insurer chooses to apply the multi-policy discount to the automobile policy prior to the effective date of the property policy a rationale must be provided. A procedure must be in place to deal with situations where the property policy does not ultimately come into force. In no instance should the discount be allowed to be applied more than six months prior to the proposed effective date of the property policy.

e) FSCO is unlikely to approve a rate filing if the insurer's proposed rate level change includes an overstatement with respect to the estimated impact of the introduction of a new discount.

## 22. Dislocation and Capping Premium Increases (Rate Capping) (7.g.)

Insurers must take into consideration the impact that proposed rate changes will have on consumers. Information on rate dislocation is required in Appendix A. Any proposed capping procedure must be fully described in this section. The capping impact must be calculated based on the main coverages, including OPCF 44R but excluding endorsements and Optional Accident Benefit coverages. The capping procedure must indicate which coverages are specifically covered by capping.

While capping is usually done at the differential level, capping at the total premium per vehicle level is permitted only under the limited circumstances outlined below. Capping premium increases (positive capping) will be considered for approval by FSCO in minimizing dislocation under the following circumstances:

a) Insurance Company Mergers and Acquisitions: Due to the potential complexity of such situations, insurers will be required to develop a plan to phase out positive capping (if it is proposed) within a two-year time period.

b) Extensive Risk Classification System Changes: When insurers are introducing new variables or unbundling existing ones that create, for example, a situation in which more than 20% of their customers see an increase of more than 20%, positive capping may be considered for a period of two years or less (i.e., from the effective date of the approved rate filing for renewal business). The proposed rate cap must be at the same level for each risk that is affected on the total premium per vehicle, regardless of the different risk classification system or level of coverages purchased.

c) Insurers may continue to submit rate filings during this period; however, no new positive capping will be considered for approval by FSCO unless the positive capping from the previously approved filing has been exhausted.

**Requirements:**

a) Insurers must provide the "uncapped" overall proposed rate level change along with the "capped" overall proposed rate level change in a rate filing where positive capping is initially proposed.

b) Insurers are required to track all policies where positive capping has been applied and the reason. Insurers are also required to track all policies on which, in accordance with an approved rate filing, the positive cap has not been applied and the premium increase therefore exceeds the cap. This information must be tracked by the insurer on an ongoing basis and made available to FSCO upon request.

c) The capped overall rate level change will be published on the FSCO website for quarterly rate approvals when rates are initially capped. As the cap is unwound, FSCO's website for quarterly rate approvals will reflect the annual impact of the unwinding of the cap.

d) Where FSCO has approved a filing containing initial rate capping, and there is therefore an identified capped amount and an identified uncapped amount, the entire amount of the uncapped increase will be reported on the first anniversary of the renewal effective date of the filing unless the insurer files an alternate number.

e) Insurers are required to submit annual reports (anniversary reports) to FSCO that describe, in the manner set out in paragraphs (f) to (h) below, the impact of the cap in each subsequent year until the cap is exhausted. **Each anniversary report must be delivered to FSCO no later than 90 days before each anniversary of the effective date, for renewal business, of the filing that introduced the cap. If an anniversary report is not filed by the due date, any filing submitted for approval after the due date will be deemed incomplete, and any filing for which approval is pending as of the due date will be deemed to require further information, until the anniversary report is filed.**

f) The capping amount that is **unwound** in the year must be reported in the anniversary report. The percentage of the unwinding effect in the current anniversary report together with the amount of capping to be reported in future anniversary reports must reconcile with the difference between uncapped and capped increases reported to date, assuming no changes in the distribution of risks. The rationale for any significant differences must be provided.

g) The amount of unwinding the cap in the first anniversary report is the difference between the capped premium in PY1 (policy year 1) and the capped premium in PY2 (policy year 2), where PY1 is the one year period from the effective date of the *initial* capping filing, etc. The amount of capping to be unwound in subsequent anniversary reports is the difference between the manual (uncapped) premium and the capped premium for the effective period.

h) The following information is required in the anniversary report:
   - a description of the methodology used;
   - a chart showing the distribution of business for the in-force book that was subject to the original cap;
   - a chart showing the distribution of business for the current in-force book that is subject to the cap;
   - a list of all rate filings impacted by the capping together with the uncapped and capped rate changes.

i) Capping will not be permitted under the following circumstances:

   - Base rate changes only;
   - Broker portfolio transfers or acquisitions;
   - Premium decreases (negative capping).

**23. Auto Insurance Manual Pages**

A draft set of manual pages containing proposed rating rule changes or definition changes must be provided in the filing.

Any changes or additions to the rating rules, definitions or text in the proposed Auto Insurance Manual, must be denoted by a side bar (|).

A final complete set of manual pages in electronic format (or CD), containing the approved risk classification system must be submitted within 30 days after the filing has been approved, in accordance with the *Automobile Insurance Manual Filing Guidelines*. Failure to submit an Automobile Insurance Manual filing can be treated as a compliance matter and the insurer may be subject to further regulatory action by FSCO. The insurer must include a copy of the most current vehicle rate group tables in the manual filed with FSCO.

## F. Rate Filing Checklist for Major Filings

In order to further assist insurers when preparing their filings, attached as **Exhibit 4**, is a checklist that insurers can use prior to submission of a Major filing. By using this checklist, an insurer may ensure that the filing is complete and the documents required in the filing are included.

**Exhibit 1**

## CRITERIA FOR SIMPLIFIED FILINGS

The following criteria must be met for an insurer to be able to use the Simplified Filing process. Please note that this information is updated annually so please ensure you have the most current criteria.

(a) Initial Rate Change Requirements

- On an all coverages combined basis, the proposed overall rate level change must be less than or equal to 0.0%.
- Any existing territorial base rate or differential change must be between -15.0% and +5.0%.
- Any other changes to existing differentials or risk classification elements must be between -15.0% and +5.0% with no off-balancing. Each change to a differential is to be measured with reference to the current differential after re-basing the average proposed differentials to the same average current differentials for each coverage.
- Changes to existing risk classification elements including discounts, rating variables and rating rules are permitted. A rationale must be provided for any change.
- The introduction of a new discount is permitted, except for any usage-based (telematics) discount. A discount being proposed must be identical to a discount already approved for another insurer and currently being used in the Ontario market.
- No changes to the rating algorithm are permitted, except when new discounts are being proposed by the insurer.

(b) Rate Level Recovery Option Requirements

- An insurer can recover up to 50% of the most recently approved rate level reduction under the *Simplified Filing Guidelines* process (not the *CLEAR Simplified Guidelines* process).
- The recovery rate change can only be made to rates and risk classification elements that were previously approved by FSCO through the *Simplified Filing Guidelines* process.
- The rate recovery must apply at a coverage base rate level change and not to previous reductions in the differentials.
- A rate level recovery filing may propose a rate recovery to be effective no sooner than the one-year anniversary of the effective dates of the prior rate reduction approved by FSCO.
- No Private Passenger Automobile Major rate filing was submitted or approved during the intervening period between the two filings.

(c) Cumulative Impact

- The cumulative impact of all the proposed changes in the initial Simplified Filing and rate level recovery option does not result in a rate increase of more than 15% to any one consumer.

# BENCHMARK ASSUMPTIONS FOR PRIVATE PASSENGER AUTOMOBILE INSURANCE FILINGS FOR REFERENCE PURPOSES

The following benchmark assumptions are provided for your information. The benchmarks are being released to facilitate the preparation of filings and are based on the most recent Ontario industry private passenger data available through the Automobile Statistical Plan. Additional details on the analysis of benchmarks are provided in a separate document titled "Analysis of Reform Cost and Loss Trend Rates for Ontario Private Passenger Automobile Insurance".

## 1. Loss Trends

Loss trends should reflect the expected changes in loss costs in the future period that new rates will be effective. The benchmark loss trends are evaluated based on all industry private passenger automobile insurance data as of June 30, 2018. The benchmark loss trends are updated regularly and used by FSCO to assess the reasonableness of loss trend assumptions.

| **Standard Coverage** | **Past Trend*** | **Future Trend*** |
|---|---|---|
| Third Party Liability – Bodily Injury | 2.3% | 2.3% |
| Third Party Liability – DCPD and PD-Tort | 8.8% | 7.2% |
| **Third Party Liability – Total** | **5.2%** | **4.5%** |
| Accident Benefits – Medical Benefits | 5.5% | 5.5% |
| Accident Benefits – Rehabilitation/Attendant Care | 6.0% | 6.0% |
| Accident Benefits – Disability Income | 4.5% | 4.5% |
| Accident Benefits – Death Benefits | 0.4% | 0.0% |
| Accident Benefits – Funeral Services | -0.2% | 0.0% |
| Accident Benefits – Quebec Excess | 0.0% | 0.0% |
| **Accident Benefits – Total** | **5.4%** | **5.4%** |
| Uninsured Automobile | -2.5% | -2.5% |
| Underinsured Motorists (OPCF 44R) | 10.7% | 10.7% |
| Collision | 8.5% | 6.6% |
| Comprehensive | 3.8% | 3.8% |
| Specified Perils | 26.5% | 26.5% |
| All Perils | 8.7% | 7.2% |

*Cut-off date for the past and future trends is April 1, 2018

## 2. 2015 and 2016 Reform Benchmark Cost Adjustment Factors

The column titled "Reform Benchmark Cost Adjustment Factors – Includes January 2015 Changes, June 2016 Changes and FSCO's 2%" in the following table includes the automobile insurance reform cost adjustment factors benchmarked for use to reflect the impact of the 2015 and 2016 reforms on loss costs. These adjustment factors are provided for adjusting accident year experience loss costs from pre-reform to post-reform levels.

| Standard Coverage | Reform Benchmark Cost Adjustment Factors |
|---|---|
| **Private Passenger Automobile** | **Includes January 2015 Changes, June 2016 Changes and FSCO's 2%** |
| Third Party Liability - Bodily Injury | 0.768 |
| AB - Medical | 0.830 |
| AB - Rehab/Attendant Care | 0.583 |
| AB - Medical/Rehab/Attendant Care | 0.760 |
| AB - Disability Income | 0.856 |
| AB - Death Benefits | 0.987 |
| AB - Funeral Benefits | 0.988 |
| Total Accident Benefits | 0.782 |
| All other Coverages | 0.980 |

**3. Underwriting Profit Provision Benchmark**

A target Underwriting Profit Provision of 5.0% is considered to be reasonable for use in the development of actuarially indicated rates.

**4. Discount Rate for Cash Flow**

A rate of 2.25% is considered to be reasonable for discounting claims costs for use in the development of actuarially indicated rates.

**5. Expense Provision**

FSCO is unlikely to approve any filing that would pass through to consumers an expense provision that is significantly higher than the industry average**. Based on industry expense information, the average underwriting expense (excluding both allocated and unallocated loss adjustment expenses) is approximately 25% of premiums for the private passenger automobile insurance line in Ontario.** FSCO will consider the type of distribution channel that a company uses to assess an appropriate expense provision.

**Exhibit 3**

# OTHER THAN PRIVATE PASSENGER AUTOMOBILE - MAJOR FILINGS AND OTHER THAN PRIVATE PASSENGER AUTOMOBILE - MINOR FILINGS

A "major" filing for a particular category of automobile insurance, other than a Private Passenger Automobile filing, needs to be submitted where:

- the insurer's annual direct written premiums meet or exceed the level specified below **AND** the Average Cumulative Rate Change for the filed category is 10% or more (the Average Cumulative Rate Change is calculated in accordance with the instructions in Section 2 of the *Filing Guidelines* and is to be provided in response to Question 5b of Appendix A);

or

- the insurer is filing for a category of automobile insurance that was not previously written by the insurer;

or

- the insurer is required by FSCO to submit a major filing;

or

- the insurer has not filed for this category in the last 3 years and a rate change of 10% or more is proposed.

or

- the insurer is proposing to:
  - i. introduce any element that is new to Ontario;
  - ii. introduce any element using predictive modeling or any other non-traditional approach;
  - iii. introduce Rate Capping procedures;
  - iv. remove Rate Capping procedures; or
  - v. introduce Usage-based Insurance.

For major filings, full actuarial documentation must be provided. For minor filings, only summary information is required.

The annual direct written premium levels vary by category as follows:

| Categories | Level |
|---|---|
| Personal Vehicles - Motorcycles | $ 5,000,000 |
| Personal Vehicles - Motorized Snow Vehicles | $2,000,000 |
| Personal Vehicles - Off-Road Vehicles | $3,000,000 |
| Personal Vehicles - Motorhomes | $2,000,000 |
| Personal Vehicles - Historic Vehicles | $2,000,000 |
| Commercial Vehicles | $ 20,000,000 |
| Public Vehicles | $2,000,000 |

**Notes:**

(1) The insurer's annual direct written premiums for the **latest** complete calendar year should be used in applying the levels noted above.

(2) Fleet premiums are to be excluded in applying the levels noted above.

**Exhibit 4**

# RATE FILING CHECKLIST FOR MAJOR FILINGS

***Notes: (1) The main focus of this checklist is to highlight the most common issues we have encountered in the past while reviewing filings and is not intended to be a comprehensive checklist. You should refer to the Filing Guidelines and Technical Notes for more details.***

***(2) In general, the documentation should be in sufficient detail to enable the reviewer to trace the resulting rates from the raw data experience and other supporting data.***

**Section 1. Table of Contents**

☐ Is a table of contents included?

☐ Is each section of the filing labelled according to the guidelines and made reference to by page number?

**Section 2. Summary of Information (Appendix A)**

☐ Is a duly completed Summary of Information (Appendix A) provided?

**Section 3. Certificates**

☐ 3a. Is a Certificate of the Officer/Designate (Appendix B1) included?

☐ 3b. Is a Certificate of the Actuary (Appendix B2) included? (not applicable for fees-only filings or for Optional Accident Benefits/Tort Deductibles-only filings).

**Section 4. Actuarial Support**

☐ Are all pages labelled/numbered according to the guidelines?

☐ 4.a. Is an Overall Description of Ratemaking Methodology and Summary provided?

4.b. Losses

- ☐ Is the source of data identified?
- ☐ If company data (exposure, premium, claims and losses) as reported to the Automobile Statistical Plan (ASP) was used in the rate filing, are there any data quality problems which significantly affect interpretation of the statistical plan experience?
- ☐ If company data (exposure, premium, claims and losses) as reported to ASP was not used, does the ratemaking data reconcile closely with the data reported to ASP, and any differences explained?
- ☐ Are all of the data reported on Appendix A, pages A4 & A5 in respect of the two most recent accident years and reconciled against the ratemaking data, and any differences explained?
- ☐ Are direct losses (prior to any reinsurance transactions) used?

4.b.1 Loss Development

- ☐ Are the company loss development triangles provided?
- ☐ Is the rationale for the selected loss development factors provided?

4.b.2 Loss Trends

- ☐ Is the source of data identified?
- ☐ Is the support and rationale for the selected loss trends provided?

## RATE FILING CHECKLIST FOR MAJOR FILINGS

4.b.3 Treatment of Large Losses
- ☐ If any special treatment of large losses in the overall and/or territorial rate calculations are used, is a full description and rationale provided?

4.b.4 Catastrophe (or Excess Claim) Procedure
- ☐ If an explicit catastrophe procedure is used, is a full description and rationale provided?

4.b.5 Auto Reforms Adjustment
- ☐ Have adjustments to losses been made for all recent auto insurance reforms?

4.b.6 Other Adjustments
- ☐ If any other adjustments are made to the loss data, is a full description and support provided?
- ☐ What is the source of data?

4.c. Allocated Loss Adjustment Expenses (ALAE) - ***if applicable***
- ☐ Is the source of data identified?
- ☐ If company data as reported to ASP was not used, does the ALAE data used reconcile closely with the data reported to ASP, and any differences explained?
- ☐ Are direct ALAE amounts (prior to any reinsurance transactions) used?

4.c.1 ALAE Development
- ☐ Is the company ALAE development triangle provided?
- ☐ Is the rationale for the selected ALAE development factors provided?

4.c.2 ALAE Trends
- ☐ Is the source of data identified?
- ☐ Is the support and rationale for the selected ALAE trends provided?

4.c.3 Catastrophe (or Excess Claim) Procedure
- ☐ If an explicit catastrophe procedure is used, is a full description and rationale provided?

4.c.4 Other Adjustments
- ☐ If any other adjustments are made to the ALAE data, is a full description and support provided?

4.d. Unallocated Loss Adjustment Expenses (ULAE)
- ☐ Is a complete description and all supporting data and exhibits included?
- ☐ Does ULAE vary significantly from the industry average and if so has appropriate explanation been provided?

4.e. Premium
- ☐ Is the source of data identified?
- ☐ Are direct premium (prior to any reinsurance transactions) used?

## RATE FILING CHECKLIST FOR MAJOR FILINGS

4.e.1 On-Level Adjustments

- ☐ Is the approach described?
- ☐ If the parallelogram method is used, are the calculations disclosed?
- ☐ If the "extension of exposures" method is used, is a comparison with the "parallelogram method" provided and significant differences explained?
- ☐ Is history of rate changes for each coverage for the prior five years provided?

4.e.2 Premium Trend

- ☐ Is the source of data underlying premium trend calculations identified?
- ☐ If company exposure distributions by rate group are used, are the distributions at applicable time periods provided?

4.e.3 Other Adjustments

- ☐ If any other adjustments are made to the premium, is a full description and support provided?

4.f. Other Expenses

- ☐ Is the allocation of the expenses between exposure variable (fixed) and premium variable (variable) provided?
- ☐ Is the most recent company expense experience provided?

4.g. Underwriting Profit Provision

- ☐ Is sufficient detail for the determination of the expected rate of return on policyholder supplied funds provided?
- ☐ Is sufficient detail for the determination of the target and proposed underwriting profit provision provided?
- ☐ Are the pay-out patterns by coverage provided?
- ☐ Is an appropriate tax rate included?

4.h. Credibility

- ☐ Is the credibility standard and the partial credibility formula provided?
- ☐ If a credibility complement is used, is a description of the approach, data source and details of all necessary adjustments provided?

4.i. Other Adjustments

- ☐ If any other adjustments are made that will affect the expected premium or losses, is the effect quantified and their effects disclosed and supported?

4.j. Summary Rate Level Indications

- ☐ Have summary sheets showing how the data combines with the adjustments and provisions outlined in subsections (4.b.) to (4.i.) been provided?
- ☐ If experience weights are different from the previous major filing, are the changes disclosed, and the rationale provided?

## RATE FILING CHECKLIST FOR MAJOR FILINGS

4.k. Territorial Indications and Proposed Differentials - ***if applicable***

4.k.1 Indicated Differentials and Proposed Differentials

- ☐ Is a detailed description of the approach provided?
- ☐ Is the source of data identified?
- ☐ Is a comparison of current, indicated and proposed territorial differentials, as well as the rebased current, indicated and proposed differentials, provided?
- ☐ Is the premium distribution and exposure distribution by territory and by coverage provided?
- ☐ Are the rebased indicated and proposed changes in the direction of the indication and within +/-10%?

4.k.2 Off-Balance

- ☐ If the proposed territorial changes are being off-balanced, is the data used in the process of calculating the off-balance and all calculations provided?
- ☐ If the proposed territorial changes are not off-balanced, are subsections (4.a.) - (4.j.) completed?

4.k.3 Definitions

If changes to territorial definitions are being proposed:

- ☐ Does the proposal comply with the territorial requirements found within the *Technical Notes*?
- ☐ Are colour maps showing current and proposed territorial boundaries included?

4.l. Implementation of Rate Group Differentials - ***if applicable***

4.l.1 Overall Description for Implementing a new rate group methodology.

- ☐ Is the approach for implementing a new rate group methodology described?
- ☐ If any capping procedures are used, are all details provided?
- ☐ Is a list of the capped vehicles provided?

4.l.2 Off-Balance

- ☐ If the proposed changes due to the introduction of a new rate group methodology are being off-balanced, is the data used in the process of calculating the off-balance and all calculations provided?
- ☐ If the proposed changes due to the introduction of a new rate group methodology are not off-balanced, are subsections (4.a.) - (4.j.) completed?

## RATE FILING CHECKLIST FOR MAJOR FILINGS

4.m. Classification/Limit of Liability/Deductible or Other Rate Differential Indications - ***if applicable***

4.m.1 Indicated Differentials

- ☐ Is a detailed description of the approach provided?
- ☐ Is the source of data identified?
- ☐ Is a comparison of current, indicated and proposed differentials provided and compliance to the 'rate equity and minimization of rate dislocation' requirement in the *Technical Notes* demonstrated?
- ☐ Is the premium distribution and exposure distribution by class etc., and by coverage provided?
- ☐ Have the requirements for filings that contain a general linear model or non-linear model found in the *Technical Notes* been satisfied?

4.m.2 Off-Balance

- ☐ If the proposed changes are being off-balanced, is the data used in the process of calculating the off-balance and all calculations provided?
- ☐ If the proposed changes are not off-balanced, are subsections (4.a.) - (4.j.) completed?

4.n. Rating Based on Group Membership - ***if applicable***

4.n.1 Indicated Discounts or rates

- ☐ Is a detailed description of the approach provided?
- ☐ Is the source of data identified?
- ☐ Is a comparison of current, indicated and proposed discount provided and compliance to the rate equity and minimization of rate dislocation requirement in the *Technical Notes* demonstrated?
- ☐ Is the premium distribution and exposure distribution provided?
- ☐ Have you conducted a compliance review to ensure that the proposed discounts meet the regulatory requirements?

4.n.2 Off-Balance

- ☐ If the proposed changes are being off-balanced, is the data used in the process of calculating the off-balance and all calculations provided?
- ☐ If the proposed changes are not off-balanced, are subsections (4.a.) - (4.j.) completed?

4.o. Usage-Based Insurance Pricing (UBIP) Program – ***if applicable***

- ☐ Has adequate support been provided for the UBIP discount?
- ☐ Is the UBIP discount compliant with FSCO's bulletin on UBIP?
- ☐ Has a non-standard endorsement filing been submitted to FSCO for review and approval?

## RATE FILING CHECKLIST FOR MAJOR FILINGS

**Section 5. Discount/Surcharge Changes (including Expense-Based Discounts) - *If applicable***

☐ Is a detailed description of the approach provided?
☐ Does the discount award safe driving?
☐ Has the discount been appropriately qualified and reported in Appendix A?
☐ Is the source of data identified?
☐ Has a comparison of the indicated, current and proposed discounts or surcharges been included?
☐ Has the written premium and the exposure distribution of the discounts and surcharges been included?
☐ Has the current and proposed distribution that determines the premium shift or a calculation of the estimated impact been included?

**Section 6. Rating Rule Changes - *If applicable***

6.a. Rating Rule Changes for Classification Variables
☐ Is a description of the proposed changes provided?
☐ Is a rationale for the proposed changes provided?
☐ Are the rate level effects of the proposed changes provided?
☐ Are calculations that validate the rate level effect of the proposed changes based on the expected distribution of business provided?

6.b. Rating Rule Changes for Discounts and Surcharges
☐ Is a description of the proposed changes provided?
☐ Is a rationale for the proposed changes provided?
☐ Are the rate level effects of the proposed changes provided?

**Section 7. Final Rates**

7.a. ☐ Current and proposed algorithms included?
7.b. ☐ Current and proposed base rates included?
7.c. ☐ Current and proposed differentials included?
7.d. ☐ Current and proposed discounts and surcharges included?

☐ Have exhibits been provided that clearly describe how the current manual territorial premium are transformed into proposed manual territorial base premiums through the application of the proposed rate change in combination with any off-balance?

7e. Calculation of Final Rates
☐ Have exhibits been provided that clearly describe how the current manual territorial premium are transformed into proposed manual territorial base premiums through the application of the proposed rate change in combination with any off-balance?

7.f. Calculation of Rate Level Change and Current/Proposed Average Rate
☐ Have exhibits been provided that clearly describe how the rate level impact of the changes is determined for each Coverage?
☐ Have exhibits been provided that clearly describe how the current and proposed Average Rate are determined for each Coverage?

7.g. Dislocation and Capping - ***if applicable***
☐ Is a complete description of the capping procedures included?
☐ Has a summary of the dislocation been provided?

## RATE FILING CHECKLIST FOR MAJOR FILINGS

**Section 8. Dependent Categories - *if applicable***

- ☐ Have calculations that validate the rate level effect of the proposed changes for the dependent categories been included?
- ☐ Has a copy of the rating rule that stipulates the linkage to category of automobile insurance been included?
- ☐ Has Section 10, risk profiles and risk criteria for the dependent categories been completed?

**Section 9. Manual Pages Containing Revised Rates and Risk Classification System**

- ☐ Has a draft set of manual pages containing all proposed rating rule changes, discount and surcharge changes, and definition changes been included?

**Section 10. Rating Examples (Appendix C)**

- ☐ Have the risk profiles and risk criteria been completed and included, including Additional Optional Coverages?
- ☐ Has the additional information required in Profiles 5, 6 and 11 been taken into account?

**Section 11. Fee Changes (If applicable)**

- ☐ Has Appendix D been completed and included?
- ☐ Have the Certificate of Officer, draft manual pages and rationale for changes been included?

**Section 12. Optional Accident Benefits and Tort Deductible Changes (if applicable)**

- ☐ Has Appendix E been completed and included?
- ☐ Have the Certificate of Officer, draft manual pages and rationale for changes been included?

# What do the coverages mean?

**Accident Benefits:** Benefits that you or other insured persons may receive if injured or killed in an auto accident. The benefits may include: income replacement; medical, rehabilitation and attendant care; funeral and death expenses. Optional accident benefits are also available above the standard accident benefits in your auto policy.

**All Perils coverage:** This combines Collison or Upset and Comprehensive coverages. In addition, it covers loss or damage caused if a person who lives in your home steals the vehicle that is covered by your insurance policy. It also covers you if an employee who drives or uses, services or repairs your vehicle, steals it.

**Attendant Care Benefit:** Pays for expenses incurred for an aide or attendant to look after you if you have been seriously injured in an auto accident.

**Caregiver Benefit:** If you are providing full-time care to dependants and can no longer provide that care as the result of a catastrophic injury suffered in an auto accident, you may be eligible for caregiver benefits to reimburse you for your expenses to hire someone to care for your dependants.

**Catastrophic injury:** Is a serious and life-threatening injury, with the full definition set out in regulation. It may involve the loss of use of limbs or complete loss of eyesight as well as other injuries as defined in regulation. In Ontario there is a higher level of benefits available when the injury is catastrophic. If you suffer an injury in an accident, you can apply and be assessed for a determination of whether your injury qualifies as "catastrophic".

**Collision or Upset coverage:** Pays for losses caused when your vehicle is involved in a collision with another object, including another vehicle, or rolls over.

**Comprehensive coverage:** Pays for losses for certain perils, such as falling or flying objects, and vandalism.

**Death and Funeral Benefit:** If you die as a result of an auto accident, the death benefit provides a lump sum payout to your spouse and your dependants; the funeral benefit provides a lump sum payout to cover the cost of your funeral expenses.

**Dependant Care Benefit:** Pays for additional expenses incurred to care for your dependants if you are employed and are injured in an auto accident and not receiving the Caregiver Benefit.

**Direct Compensation-Property Damage (DC-PD):** Covers damage to your vehicle or its contents if another person was at fault for the accident. It is called direct compensation because even though someone else causes the damage, you collect directly from your own insurer. The accident must also occur in Ontario and both drivers must be insured by an insurance company licensed in the province.

**Family Protection Coverage (OPCF 44R):** Covers you for the difference between the at-fault driver's Third Party

Liability limit and your own Third Party Liability limit if someone with less liability coverage than you injures you in an accident.

**Housekeeping and Home Maintenance expenses:** If you are unable to perform your usual duties due to a catastrophic injury, this benefit pays for reasonable and necessary additional expenses for someone to complete your usual duties.

**Income Replacement Benefit:** If you cannot work as the result of an auto accident, you may be eligible for basic weekly income replacement benefits of up to $400. This benefit commences after one week.

**Indexation Benefit:** The automatic adjustment of the income replacement benefit, non-earner benefit, attendant care benefit or medical and rehabilitation benefit according to the Consumer Price Index for Canada to compensate for inflation.

**Medical and Rehabilitation Benefit:** Covers the cost of reasonable and necessary medical and rehabilitation expenses (e.g., physiotherapy, prescriptions) that are not covered by OHIP or your disability insurance plan but which are listed in the Statutory Accident benefits schedule. Other expenses not listed might be covered if they are agreed by the insurer and are seen as essential to your recovery.

**Specified Perils coverage:** Covers damage to your vehicle caused by one of the following perils: fire; theft or attempted theft; lightning, windstorm, hail or rising water; earthquake; explosion; riot or civil disturbance; falling or forced landing of an aircraft or parts of an aircraft; or the standing, sinking, burning, derailment or collision of any kind of transport in, or upon which, an insured vehicle is being carried on land or water.

**Third Party Liability:** This section of your automobile insurance policy protects you if someone else is killed or injured, or their property is damaged. It will pay for claims as a result of lawsuits against you up to the limit of your coverage, and will pay the costs of settling the claims. By law you must carry a minimum of $200,000 in Third-Party Liability coverage but options exist to increase the minimum amount

**Tort Deductible:** The amount that is deducted from a settlement or court award for pain and suffering.

**Uninsured Automobile coverage:** Protects you and your family if you are injured or killed by a hit-and-run driver or by an uninsured motorist. It also covers damage to your vehicle caused by an identified uninsured driver.

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## What do the terms mean?

**Coverage:** The scope of protection provided under an insurance policy.

**Deductible:** An insurance deductible is the amount you have to pay for losses and damages for which you are covered before your insurance payments kick in. Raising deductibles means you'll contribute more toward the loss if you have an accident, but it can mean a lower insurance premium.

**Endorsement:** Any change made to your existing auto insurance policy that either expands or restricts coverage.

**Exclusions:** Items or conditions that are not covered by the general insurance contract.

**Minor Injury:** Minor injuries include sprains and strains, contusions and lacerations, or whiplash injuries. If you are deemed to have suffered a minor injury in an auto accident, your medical and rehabilitation benefits will be fixed at a maximum limit of $3,500, regardless of any optional increased benefits you have purchased.

**Premium:** The amount of money that you pay for your insurance policy.

**Risk Classification:** Is a grouping of risks or policyholders with similar risk characteristics to determine rates. Typical risk classifications are based on: type of vehicle, use of vehicle, driving record of drivers, age, gender and marital status of drivers and territory.

**Tort:** A wrong that is committed by one person on another that causes injury to that person. A tort can be either intentional or unintentional. Liability insurance is mainly purchased to cover unintentional torts.
Underwriting: The process of selecting or rejecting risks for insurance.

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# Common Pitfalls and Practical Considerations in Risk Transfer Analysis

Derek Freihaut, FCAS, MAAA, and Paul Vendetti, FCAS, MAAA

The current papers available on risk transfer have provided background and a general description of the tools available for analysis. Risk transfer analysis has many nuances that can trip up an actuary testing a contract. This paper discusses several of these pitfalls and provides direction on how to address them based on previously published materials from the accounting boards, the American Academy of Actuaries (AAA), and the Casualty Actuarial Society (CAS). This paper also addresses several outstanding risk transfer concerns that have no easy answers. While these issues do not have obvious solutions, the intent of the paper is to shed some light on these topics and open the door for further discussion.

To facilitate the discussion of these common pitfalls and practical considerations two example contracts are reviewed with an Expected Reinsurer Deficit (ERD) calculated for both.

**Keywords**: Risk transfer, Expected Reinsurer Deficit (ERD), FAS 113, Reinsurance Attestation Supplement (RAS), SSAP 62.

## 1. INTRODUCTION

Current papers available on risk transfer have provided background and a general description of the tools available for analysis. However, risk transfer analysis has many seemingly minor nuances that can trip up an actuary testing a contract. In this paper, we will discuss several of these pitfalls and provide direction on how to address them based on previously published materials from the accounting boards, the American Academy of Actuaries (AAA), and the Casualty Actuarial Society (CAS). We will also highlight a number of practical considerations that have not received as much attention in the available literature. While these practical considerations do not have obvious solutions, we hope to shed some light on the available options and open the door for further discussion on the topic.

### 1.1 Risk Transfer in Current Literature

This discussion is derived from a review of existing risk transfer literature, most notably "Reinsurance Attestation Supplement 20-1: Risk Transfer Testing Practice Note" from the AAA Committee on Property and Liability Financial Reporting and "Risk Transfer Testing of Reinsurance Contracts: Analysis and Recommendations" from the CAS Research Working Party on Risk Transfer Testing [1][2]. We also relied heavily on the accounting standards, Financial Accounting Standard No. 113, "Considerations in Risk Transfer Testing" (FAS 113) and SSAP 62, "Property and Casualty Reinsurance." While some discussion of the CAS Working Party paper and the AAA Practice Note is necessary, this paper is an attempt to go beyond the framework provided in the

current literature and review the more routine issues faced by actuaries in reviewing reinsurance transactions for risk transfer.

## 1.2 Objective

In this paper, we will discuss several pitfalls and practical considerations with risk transfer analyses. We will provide direction on how to address the pitfalls based on previously published materials and we hope to shed some light on the available options concerning the practical considerations and open the door for further discussion on the topics.

## 1.3 Outline

In Section 2 of this paper we will present a brief history and background of risk transfer, including a discussion of the terms "substantially all" and "self-evident," as well as discussion on measuring risk transfer and risk transfer thresholds.

Section 3 will contain a discussion on the pitfalls and practical considerations. We will start by showing two sample contracts that will be used as a basis for much of the discussion, and how to analyze risk transfer. Next we will cover various pitfalls, including discussion on the following topics:

- Profit Commissions
- Reinsurer Expenses
- Interest Rates and Discount Factors
- Premiums
- Evaluation Date
- Commutation and Timing of Payments

In the last part of Section 3, we will highlight some of the practical considerations in risk transfer testing, including discussion on:

- Parameter Selection
- Interest Rate
- Payment Pattern
- Loss Distribution

- Parameter Risk
- Use of Pricing Assumptions
- Commutation Clauses

The fourth and final section of the paper will contain a short wrap up, conclusions and a reminder that risk transfer testing is a principle-based exercise and not just a "plug and chug" methodological exercise.

## 2. BRIEF HISTORY OF RISK TRANSFER

Since the reinsurance goals of ceding companies are as different as the risks reinsured, reinsurance contracts contain a variety of terms and conditions that can impact the economic structure of the reinsurance transaction. When a contract qualifies as reinsurance there are certain accounting benefits that a ceding company can realize.

The demonstration of risk transfer for reinsurance is required by FAS 113 in order for the contract to receive reinsurance accounting treatment under Generally Accepted Accounting Principles (GAAP). Statutory Accounting Principles (SAP) defined in SSAP 62 are similar in guidance to FAS 113. Generally, both standards for risk transfer require that:

1. The reinsurer assumes significant insurance risk under the reinsured portion of the underlying insurance agreement; and
2. It is reasonably possible that the reinsurer may realize a significant loss from the transaction.

Because the terms "significant insurance risk," "reasonably possible," and "significant loss" are not defined in either accounting standard, the challenge is to appropriately interpret and apply the accounting standards to each reinsurance transaction.

The abuses of the past several years in the use of finite reinsurance contracts have highlighted the need to document and quantify risk transfer. An increase in scrutiny of reinsurance contracts led to the introduction of the "Reinsurance Attestation Supplement," in the 2005 NAIC Annual Statement.

The supplement requires the chief executive officer (CEO) and chief financial officer (CFO) to confirm that:

1. There are no separate written or oral agreements between the reporting entity and assuming

reinsurer.

2. There is documentation for every reinsurance contract for which risk transfer is not reasonably self-evident that details the transaction's economic intent and that documentation evidencing risk transfer is available for review.

3. The reporting entity complies with all requirements set forth in the Statement of Statutory Accounting Principles No. 62, "Property and Casualty Reinsurance" (SSAP 62).

4. The appropriate controls are in place to monitor the use of reinsurance.

CEOs and CFOs have the responsibility to attest to risk transfer in reinsurance transactions. However, since actuaries are uniquely qualified to quantify and evaluate risk transfer, they are increasingly being called upon to quantify risk transfer and provide the necessary documentation.

As mentioned above, GAAP and SAP accounting standards contain similar wording about what is required for risk transfer to be present. Most notably, both require the presence of insurance risk. Insurance risk has two components, underwriting risk and timing risk. If both of these types of risk are not present, then insurance risk has not been transferred. While risk transfer is independently defined in each standard, we are unaware of any examples of a contract that would meet the requirements of one standard, but not the other. Contracts that qualify according to one standard are generally considered to meet the requirements of the other standard as well.

## 2.1 One Exemption from Risk Transfer Requirements – "Substantially All"

Both GAAP and SAP accounting standards specifically require that it be reasonably possible that the reinsurer may realize a significant loss from the transaction, except in cases where the reinsurer meets the "substantially all" requirement. This is meant to exempt a very narrow definition of contracts where the reinsurer assumes "substantially all of the insurance risk relating to the reinsured portions of the underlying insurance contracts." The most common examples are straight quota share or individual risk contracts with no loss ratio caps or other risk limiting features. The reason for this exemption is that it allows companies to acquire qualifying reinsurance on inherently profitable books of business where it may not be reasonably possible that the reinsurer will realize a significant loss.

## 2.2 Required Risk Transfer Documentation and Reasonably Self-Evident

When the NAIC introduced the "Reinsurance Attestation Supplement" (RAS) in 2005 they also

introduced a new term to the risk transfer lexicon, "reasonably self-evident." The RAS requires documentation "for every reinsurance contract for which risk transfer is not reasonably self-evident." This classification of contracts is meant to reduce the need to rigorously test every reinsurance contract for risk transfer. Unfortunately, very little guidance was offered on what "reasonably-self evident" encompasses. The AAA Practice Note followed the introduction of the RAS and laid out some general guidelines for establishing when the presence of risk transfer is reasonably self-evident. The guidelines were general in nature and provided characteristics to look for in contracts to determine when risk transfer is reasonably self-evident and when it is not.

The CAS Working Party paper took these guidelines one step further and provided a list of specific contract categories where risk transfer is reasonably self-evident based on meeting a 1% Expected Reinsurer Deficit (ERD) threshold. They point out that this list is preliminary and expect it could be considerably expanded. They also point out that there are exceptions to the list, such as when a contract looks contrived. We feel that it can be dangerous to attempt to codify this terminology with explicit definitions. Every contract is different and must have its terms thoroughly reviewed.

Specifically, the CAS Working Party paper lists a couple of categories that we do not agree are always reasonably self-evident such as individual risk contracts and certain long tail excess of loss treaties. Individual risk treaties with no significant risk limiting features would likely be exempt from the accounting standards since the reinsurer assumes "substantially all" of the underlying risk. For individual risk contracts that do not qualify for this exemption, it is not hard to imagine special features that would restrict risk transfer.

For long tail excess of loss treaties, the CAS Working Party paper provides a few numerical qualifications to meet the reasonably self-evident standard. For excess of loss contracts that are not on short tail exposures, the CAS Working Party paper finds that any contract with aggregate limits no less than one per occurrence limit or twice the premium, meets the reasonably self-evident criteria if there are no ceding commissions and the rate on line is below 500%. It is not difficult to construct a contract around these parameters that clearly does not transfer risk. An extreme example would be a single doctor paying $1M for a $1M x $5M medical malpractice treaty with a $2M aggregate limit. This contract passes the established criteria for the risk transfer to be reasonably self-evident, but I think most would agree that not enough risk is transferred in this contract for it to qualify as reinsurance. This is obviously an unrealistic example, but it shows how applying specific parameters on the terminology can lead to unintended results.

The RAS requires documentation "for every reinsurance contract for which risk transfer is not reasonably self-evident." It seems obvious that any contract requiring a more rigorous review would also require documentation for the model results. However, it is our recommendation that documentation be kept on all reinsurance contracts reviewed for risk transfer. We think it is valuable to have documentation for those contracts found to be exempt for any reason, although the most notable are those that meet the "substantially all" clause. We find it to be just as important to document any contract where the risk transfer is found to be reasonably self-evident. While the term reasonably self-evident might lead one to believe the conclusion is obvious and anyone who picks up the contract will reach the same conclusion, not all contracts that meet this standard are clear cut. This is of particular importance if you are using any reference, such as the previously discussed list from the CAS Working Party Paper, to make your determination. The AAA Practice Note also recommends keeping documentation for reasonably self-evident contracts. The practice note also includes several example checklists in the appendix from companies who have made this type of documentation standard.

## 2.3 Selected Risk Measuring Method – Expected Reinsurer Deficit (ERD)

Neither SSAP 62 nor FAS 113 provide a clear numeric trigger of when risk transfer fails. The "10-10" rule was developed as a benchmark to give meaning to the criteria in the two accounting standards. The "10-10" rule says that a reinsurance contract exhibits risk transfer if there is at least a 10% chance of a 10% or greater loss for the reinsurer.

Another method that has gained acceptance and overcomes some shortcomings of the "10-10" rule is the Expected Reinsurer Deficit (ERD). ERD can be viewed as the probability of a net present value (NPV) underwriting loss for the reinsurer multiplied by the NPV of the average severity of the underwriting loss. A treaty is typically considered to exhibit risk transfer if ERD is greater than 1%, which is consistent with the "10-10" rule (10% loss multiplied by 10% chance is a 1% ERD). Therefore, contracts that qualify for risk transfer under the "10-10" rule generally qualify under a 1% ERD. We will discuss thresholds more in the next section.

ERD has not been explicitly endorsed by any professional body. However, while the CAS Working Party paper stopped short of endorsing ERD, they did prefer its use as a de facto standard over the "10-10" rule. There are a handful of other methods, but none of them are as widely used as the two previously mentioned. Some methods, such as Value at Risk (VaR) and Tail Value at Risk (TVaR) are generalizations of methodologies we have already discussed. Others, such as the

Right Tail Deviation (RTD) method by Wang outlined in the CAS practice note, have not caught on due to the complexity of the model [4][5]. There are also methods, such as the Risk Coverage Ratio (RCR) by Ruhm, which have not caught on due to the exclusion of key variables [3]. RCR does an adequate job of evaluating risk in the losses that are transferred, but it does not make any comparison to premium.

In this paper we will test for risk transfer using a simple cash flow simulation and calculating the Expected Reinsurer Deficit (ERD). While some of these other measures could be used in our example analysis we will use only ERD in the interest of consistency.

## 2.4 Risk Transfer Thresholds

The CAS Working Party paper began some brief discussion about what the appropriate guideline threshold percentage should be and suggested that further research be done. Currently, because it is consistent with the "10-10" rule, the most commonly recognized threshold for ERD is 1%. Some have suggested that a 2% threshold would be more appropriate. Our recommendation is to continue using the 1% threshold until a more thorough analysis suggests otherwise. Using 2% would be a more stringent guideline, but the 2% threshold does not appear to be any less arbitrary than the current 1% threshold. While the 1% threshold is based on the somewhat arbitrary "10-10" rule, there is some reasoning behind it. The "10-10" rule was loosely derived from the accounting standard language that required that the reinsurer face a "reasonable chance of a significant loss." For the purposes of risk transfer, it has been commonly accepted that a 10% chance is a "reasonable chance" and that a 10% loss is a "significant loss." From these two accepted values, the ERD of 1% has been derived and this threshold continues to gain acceptance.

The CAS Working Party paper also mentions the possibility of including other requirements, such as a required maximum loss, in order to show risk transfer. We recommend not complicating the methodology with extra arbitrary requirements. While adding a maximum loss requirement may feel intuitive, it begins to complicate the process and makes explaining results to the decision-makers more difficult. Adding requirements can also lead to more engineering of contrived contracts. If a maximum loss is required, any contract can be rewritten to incorporate a rare maximum loss.

## 3. COMMON PITFALLS AND PRACTICAL CONSIDERATIONS DISCUSSION

In order to illustrate the common pitfalls that can affect a risk transfer analysis it is first important to demonstrate how a basic risk transfer analysis is completed, highlighting many of the issues that can surface along the way. Many of the pitfalls referenced in this section are further emphasized later in the paper.

To demonstrate risk transfer analysis two reinsurance contracts are used. Contract #1 is a quota share contract while Contract #2 is an excess of loss contract.

The terms for Contract #1 are summarized in Table 1:

Table 1 - Summary of Terms - Contract #1

| | |
|---|---|
| Inception Date | 1/1/2008 |
| Estimated Subject Premium | 10,000,000 |
| Reinsurance Premium | 8,000,000 |
| | |
| Cession | 80.0% |
| Ceding Commission | 25.0% |
| Profit Commission | |
| Loss Ratio | 66.0% |
| Profit Swing | 5.0% |
| Loss Ratio Cap | 100.0% |
| | |
| *Reinsurers Expenses as % of Prem.* | |
| *Brokerage* | *2.0%* |
| *Underwriting Exp.* | *2.0%* |
| *Federal Excise Taxes* | *1.0%* |

The underlying exposure for Contract #1 is multi-state workers compensation. The company has written workers compensation for a number of years. The cession is a straightforward quota share with a loss ratio cap of 100%. This loss ratio cap has the potential to significantly affect risk transfer. The presence of the loss ratio cap does not always indicate a lack of risk transfer. Contracts, with loss ratio caps at 200% to 300% can clearly result in a significant loss ot the reinsurer. Secondly, there is a profit commission provision whereby the ceding company will receive a profit commission if the underlying loss ratio is 66% or less with maximum profit provision of 5.0%. The profit provision swings on a one-to-one basis with the loss ratio. The impact of profit

provisions on risk transfer is discussed later in the paper.

The terms of the second contract are summarized in Table 2:

Table 2 - Summary of Terms - Contract #2

| | |
|---|---|
| Inception Date | 1/1/2008 |
| Estimated Subject Premium | 10,000,000 |
| Provisional Reinsurance Rate | 8.50% |
| Provisional Premium | 800,000 |
| Maintenance Fee | 50,000 |
| | |
| Retention | 250,000 |
| Limit | 250,000 |
| Swing Rate | |
| Swing Loss Ratio | 75.0% |
| Minimum Rate | 6.00% |
| Maximum Rate | 11.00% |
| | |
| *Reinsurers Expenses as % of Prem.* | |
| *Brokerage* | *10.0%* |
| *Underwriting Exp.* | *7.0%* |
| *Federal Excise Taxes* | *1.0%* |

This is an excess of loss contract covering workers compensation exposure that has a number of potential risk limiting features. The contract is swing rated with a provisional rate of 8.5% which can swing up or down by 2.5%. The swing is based on a ceded loss ratio of 75.0%. Secondly, there is a feature that states that the contract is automatically commuted after five years unless the ceding company pays an additional maintenance fee of $50,000.

For the two example contracts it is not reasonably "self-evident" that risk transfer exists due to the presence of such features as low loss ratio caps and swing-rated premiums.

## 3.1 Analyzing Risk Transfer

The first step in any risk transfer review is to understand the reinsurance contract's terms and conditions, focusing especially on the terms that can affect the amount of risk being transferred. Care must be taken to understand not only the terms of the treaty but also when those terms will be triggered. In Contract #2 there is a commutation clause that requires a maintenance fee to avoid early commutation that is triggered after five years.

Next the reporting dates and premium due dates need to be determined. In both example

contracts the reinsurance premium is payable in quarterly installments due one month after quarter end , i.e., on April 30, July 31, October 31, and January 31 of the following year.

In both contracts there is not a pre-defined loss payment schedule and therefore losses are reimbursed as they occur. To determine the net present value of the losses, a loss payment pattern reflecting the underlying exposure being reinsured is applied. It is further assumed that losses in any given calendar year are paid at the midpoint of the year.

For Contract #2, it is assumed that the first swing rate adjustment is applied two years after the contract's effective date. Most contracts will define the timing of the experience adjustments to the premium. It is also assumed in the model that the impact of the adjustment is correctly identified for the first adjustment with no further changes to the ceding commission necessary. This assumption implies that the ultimate loss ratio is known at the first adjustment.

The second assumption is that the commutation fee will be paid by the ceding company after five years. This is a reasonable assumption since the ceding company may not want to commute the contract and reassume the risk of changes in the unpaid claims estimates.

The risk transfer analysis was completed using Monte Carlo simulation, modeling first the direct loss payments and then projecting the treaty cessions from the direct loss payments. The ceded losses are then discounted to the effective date of the treaty. Next, the final premium amounts are determined based upon the nominal treaty results, not on the discounted premiums or losses. Any premium adjustments are determined from the modeled results. Care must be taken so that the premium payment dates are appropriately modeled. Like the losses, premium payments are discounted to the treaty effective date. The reinsurer profit/loss is then calculated for each iteration of the simulation as the net present value (NPV) of all payments made from the ceding company to the reinsurer minus the NPV of all the payments made from the reinsurer to the ceding company.

All cash flows between the ceding company and reinsurer need to be represented in the model whether they are called premiums, fees, or experience adjustments. Reinsurer expenses are not included in the model since this is not a cash flow between the ceding company and the reinsurer. For instance in Contract #2 the maintenance fee is included in the analysis and the reinsurer expenses are not. The reinsurer expenses are not part of the risk assumed by the reinsurer from the ceding company.

Finally, the Expected Reinsurer Deficit (ERD) is calculated. ERD can be viewed as the probability of a net present value (NPV) underwriting loss for the reinsurer multiplied by the NPV

of the average severity of the reinsurer underwriting losses. The resulting ERD values are 2.85% for Contract #1 and 2.09% for Contract #2. Details of the simulation and ERD calculation can be found in Appendices A and B. These results indicate that both of these contracts appear to exhibit risk transfer. This conclusion is based on the calculated ERD values and the commonly accepted threshold of 1.0%. As with any risk transfer decision, the ultimate determination must be made by the company CEO or CFO or both.

## 3.2 Common Pitfalls

This section will highlight easy-to-make mistakes or common pitfalls. Most of these come from our own experience in reviewing contracts for risk transfer and reviewing risk transfer analyses of other actuaries. It is our intent to provide concrete solutions citing previously published materials.

### 3.2.1 Profit Commissions

Profit commissions generally should not be considered in risk transfer analysis. When determining if risk transfer is present, the analysis focuses only on the scenarios resulting in a loss for the reinsurer. While profit commissions can affect the economic results of a treaty, they usually are not triggered during a reinsurer loss.

This exclusion of profit commissions and focus on reinsurer loss scenarios is not necessarily intuitive. However, the accounting standards clearly state that the presence of risk transfer requires a "reasonable chance of a significant loss" to the reinsurer. Therefore, the results of the ceding company should not be considered in a risk transfer analysis.

It is important to remember that contract features like profit commissions can still have an indirect impact on risk transfer. This impact on risk transfer stems from how these features may affect other aspects of the contract, most notably the premium. Reinsurance contracts are priced while considering any and all expected payments paid and received by the reinsurer. Any addition of a profit commission clearly increases the amount of future expected payments by the reinsurer to the ceding company and may result in a higher premium for the contract.

In the example analysis for Contract #1, the profit commissions were included in the simulation to demonstrate that they did not affect the reinsurer in any loss scenarios. However, if the contract failed to meet risk transfer requirements, the ceding company and the reinsurer may consider potential changes that would allow the contract to be accounted for as reinsurance. One potential change would be to eliminate or reduce the profit commissions with a corresponding decrease in

premium. This change in premium may result in the contract meeting risk transfer requirements.

Another way profit commissions can affect risk transfer is through carryforwards. Carryforwards may be used in multi-year contracts where the profits or losses from prior years may affect the results of the future years. A contract for periods of more than one year usually requires further testing for risk transfer and any carryforwards that may impact a loss position for the reinsurer would need to be incorporated into the model. Carryforwards can also be used in one-year contracts where the primary company and reinsurer agree to terms each year and at that time choose whether or not results will be carried forward. In this case each contract renewal may require a specific analysis. If there is a carryforward from a previous year that would affect results when there is a loss for the reinsurer, then it must be incorporated into the cash flow model. However, when considering one-year contracts with no impact from prior carryforwards there is no need to incorporate potential future carryforwards since they have no impact on the contract being reviewed.

### 3.2.2 Reinsurer Expenses

Only cash flows between the ceding company and the reinsurer should be considered in a risk transfer analysis. According to SSAP 62, "The evaluation is based on the present value of all cash flows between the ceding and assuming enterprises under reasonably possible outcomes." This means that broker expenses, operating expenses, fees related to letters of credit, and taxes should bear no impact on the analysis. As can be seen in the Appendices, the analyses of the example contracts did not incorporate any of these expenses that did not result in a cash flow between the reinsurer and the ceding company.

### 3.2.3 Interest Rates and Discount Factors

SSAP 62 requires a constant interest rate to be used for discounting across all simulated scenarios. The interest rate should not vary by scenario because risk transfer analysis should only consider insurance risk. Non-insurance risks such as investment risk, currency risk, and credit risk should not be included. The AAA Practice Note interprets this to also mean that the same interest rate should be applied to all cash flows, including premiums and losses.

SSAP 62 only requires the selection of the interest rate to be reasonable and appropriate. The AAA Practice Note recommends the risk free rate as a reasonable choice. This is not necessarily a conservative selection. Because the risk free rate is commonly below a reinsurer's expected

investment returns, it will actually result in higher projected present valued losses. However, the investment abilities of the reinsurer should not affect the presence of risk transfer, so the risk-free rate is a consistent and reasonable selection for the analysis. The selection of other interest rates is considered later in the paper.

SSAP 62 states that a reasonable and appropriate interest rate "generally would reflect the expected timing of payments to the reinsurer and the duration over which those cash flows are expected to be invested by the reinsurer." Therefore the duration used to select an interest rate should be based on the net cash flows to the reinsurer.

There has been a lot of guidance on interest rate selection and there is very little room for deviation from the use of a constant interest rate in all risk transfer analyses. However, in the selection of the interest rate the accounting standards do not prescribe a set framework and note that judgment is involved. While using a risk-free rate with duration equal to that of the reinsurers net cash flows is recommended, a selected rate could still be considered a "reasonable and appropriate rate".

Page 4 of Appendix A provides an example of calculating a duration using loss and premium payments and then selecting a risk-free rate based on that duration. To get the duration of the net cash flows we performed two duration calculations. First we determined the duration of the premium payments. This was straight forward since the premium payment schedule is laid out in the contract. Next the loss duration is calculated using an industry payment pattern. The duration of the net cash flows is then the difference between the two. This calculation may not be exact, but it is a good approximation of the "duration over which those cash flows are expected to be invested by the reinsurer," as the standard requires. The calculated duration of net cash flows was then used to select an interest rate based on the years of maturity and yield curve rates from the U.S. Treasury in Columns (7) and (8). This interest rate was used in the analysis for Contract #1.

For Contract #2 an interest rate was selected with consideration given to the current risk-free rates and longer expected payment pattern for an excess of loss contract.

### 3.2.4 Premiums

The premium paid by the ceding company is one of the most significant inputs when determining if risk transfer is present. When using the "10-10" rule or ERD all potential loss situations are going to be compared against the premium to calculate a percent of loss. While its importance is clear, what the premium should include is not nearly as straightforward.

First, the premiums used in risk transfer analysis should be gross premiums. This is specifically pointed out in SSAP 62. Gross premiums entail all premium paid to the reinsurer before the consideration of any payments back such as a ceding commission.

When making comparisons against premium to determine a reinsurer's profit or loss, it is required that the present value of the premium be used. Reinsurance contracts often lay out specific payment plans for premium. The same interest rate used to discount losses should be applied to calculate the present value of the premium. While the risk transfer analysis is a present value calculation, it is important to model the actual functioning of the contract. This means that the application of the loss ratio caps and experience adjustments are based upon the nominal premium and loss amounts. As shown in Appendix A, the loss ratio cap in Contract #1 is applied to nominal losses and premiums in the simulation. The discounting of premium and losses happens after the contract losses and premiums are determined and any caps or experience based features are applied.

When the premium of a reinsurance contract is dependent upon future events, using the proper premium in a cash flow simulation is slightly more complicated.

There are a number of premiums that could be considered for this purpose. The initial deposit premium is an intuitive and simple choice, but it does not account for future payments from the ceding company to the reinsurer and could therefore be easily manipulated. The other options are to use an expected premium or the actual premium in each scenario.

The use of expected premiums may also seem intuitive, but can be troublesome as well. The most significant concern with using expected premiums is the potential over detection of risk transfer. When premium is dependent upon loss experience, the highest premium levels often occur when the loss experience is the poorest and the reinsurer's losses are at their highest. If the reinsurer's percent of loss is calculated using an average expected premium, it is likely that the resulting reinsurer loss percentage will be a larger negative value than what is actually possible. Because of this it is imperative that actual premiums are developed along with the losses for each scenario and that each scenario has a corresponding percent of reinsurer loss developed. From these simulated results, percentiles and values such as ERD can be calculated.

It is not uncommon for a reinsurance contract to include fees other than premium. When there are fees that depend upon future events, the impact of these events should be included in the model. If it is not possible to include certain events in the model, a general assumption about their impact on any future cash flows may be necessary. The conservative decision would be to include all fees

that the ceding company may be required to pay to the reinsurer. There is an example of this in Contract #2, which requires a fee to delay mandatory commutation of the contract after five years. In the example it is assumed that the primary company will not want to commute the contract and reassume the risk after five years and therefore will be required to pay a fee of $50,000. When this type of fee is expected to occur, it should be considered as premium in any calculation of reinsurer loss. While the fee may be entirely administrative and related to the reinsurer's claim handling costs, any cash flows from the ceding company to the reinsurer should be considered as premium. If this were not the case, the determination of risk transfer could be manipulated based upon the labeling of certain cash flows as premiums or fees.

### 3.2.5 Evaluation Date

The date used in risk transfer analysis will likely only be used in the selection of an interest rate or in determination of how much was known about potential losses when the contract was entered into. SSAP 62 states that "risk transfer assessment is made at the inception date based on facts and circumstances known at the time." Therefore any parameters that may be affected by the date at which they were determined should be considered from the time of the contract's inception. The contract inception date is the date the contract comes into force, or the original effective date. According to SSAP 62 it is not necessary to retest for risk transfer at every renewal unless there are any significant amendments made to the treaty. If a contract is tested at inception, the results of that test are unlikely to change. In the case of an amendment that makes a material change to the amount of risk being transferred, the amendment date should be treated as the inception date of the contract and the contract should be reviewed again for risk transfer.

### 3.2.6 Commutations and Timing of Payments

According to SSAP 62, any reinsurance contracts that have prescribed payment patterns do not meet the risk transfer requirements. In order to have risk transfer in a reinsurance contract, there must be timing risk as well as underwriting risk. Prescribed payment plans remove the timing risk necessary for risk transfer. In order for the contract to contain timing risk the reinsurer must make "timely reimbursement payments."

Contracts with commutation clauses may still meet risk transfer requirements, but to the extent they affect the cash flows between the ceding company and reinsurer, they must be modeled. If a fee is required to avoid an early forced commutation, this fee should be considered as part of the expected premium paid. If the commutation decision is unilateral, it may be necessary to

incorporate the commutation decision into the model based on economically rational decision making. To the extent the commutation clause impacts the payment pattern, this too should be considered in the cash flow model.

## 3.3 Practical Considerations

This section is meant to highlight a number of practical considerations that commonly appear in risk transfer analyses and have not been thoroughly addressed in the current literature. While not all of these practical considerations have obvious solutions, we hope to shed some light on the available options and open the door for further discussion on the topics.

### 3.3.1 Parameter Selection

One of the first and most important steps in performing a cash flow simulation for risk transfer analysis is choosing the parameters. Any parameters that are not given by the contract must be selected after some contemplation. This includes the interest rate, payment pattern, and any loss distributions used for projecting cash flows.

### 3.3.2 Interest Rate

Making the appropriate interest rate selection was previously addressed in the Common Pitfalls section. Using a risk-free rate based upon a duration calculation and the expected premium and loss payments is recommended by the AAA Practice Note. It is also required by the accounting standards that the same rate be used throughout the analysis.

While the risk-free rate is recommended, there are other possibilities to consider. It is difficult to envision a scenario were it would be reasonable to use an interest rate that is lower than the risk-free rate. This may seem conservative, but using a lower interest rate would lead to higher losses at present value and could result in over-detecting risk transfer. It is also difficult to construct an argument for why a company would not have the risk-free rate available to them. Therefore, it seems reasonable to treat the risk-free rate as the lowest possible choice, or floor, when selecting an interest rate.

A better argument could be made for selecting an interest rate above the risk-free rate. The most logical argument is that the reinsurer in the contract has a higher expected return on investments and this expected return should be used when determining if they face a "reasonable chance of a significant loss." While this argument is intuitive, it does have its flaws. First, this is not likely an

available parameter if the risk transfer analysis is being done on behalf of the ceding company. Next, if a reinsurer's expected investment returns are used in the risk transfer analysis, it will create the situation where a contract may be found to exhibit risk transfer for a reinsurer with poor investment strategy, but be found not to transfer risk for a reinsurer with superior investment strategies. This type of counter-intuitive result is also why cash flows that are not between the ceding company and the reinsurer are not considered.

Based on these considerations it is difficult to construct an argument for using anything that is not at least loosely based upon the risk-free rate. For consistency and to provide support for the interest rate selected, it may be worthwhile to base the selection on the treasury yields available at the inception date of the contract and the expected duration of the cash flows, as was done in the example for Contract #1. This approach is consistent with the recommendation from the AAA Practice Note. However, depending on the situation and in an effort to keep an analysis simple, it may also be just as reasonable to select an appropriate approximation of the current risk-free rate, as was done in the example for Contract #2.

An alternative to selecting a duration-matched interest rate, which has been used by some practitioners, is the selection of a constant yield curve. Use of a yield curve is common in company planning and in making economic decisions on contracts. However, the use of yield curves in risk transfer analysis does not appear to be consistent with the accounting standards. The AAA Practice Note finds that SSAP 62 requires, "that a single interest rate be used to present-value the cash flows."

A constant yield curve would generally result in a more stringent risk transfer analysis since interest rates tend to be higher at longer durations. The typical yield curve would lead to more discount being applied to losses in comparison to the premiums, which are often paid much quicker. While the use of a yield curve may seem like an improvement to the analysis, the language in the accounting standards clearly leads to a similar conclusion to the AAA Practice Note. Both standards refer to the use of "a constant interest rate," through all cash flow scenarios. The intent of the standards appears to be that interest rate risk should not be incorporated in the model. Thus, an interest rate that varies by scenario is not allowed. Capturing interest rate risk is not the intent of incorporating a yield curve into the analysis. A constant yield curve across all scenarios would only result in a different interest rate when the timing of the cash flows differed, which reflects risk due to the timing of losses and premiums, not the interest rate. However, the use of a yield curve to discount cash flows would result in a different effective interest rate when no losses are paid

compared to a situation where significant losses are paid. This appears to violate the requirement in SSAP 62 that the "same interest rate shall be used to compute the present value of cash flows for each reasonable possible outcome tested."

### 3.3.3 Payment Pattern

Payment patterns are often based on previous experience for the ceding company or industry benchmarks or both. While this can be a simple parameter to select, it is important to remember that there is uncertainty involved in the payment pattern. While this risk is more difficult to measure than the risk involved in a loss distribution, the timing of payments can play a significant role in the amount of risk transferred. For example, when a constant payment pattern is applied to a loss distribution, the results will not recognize the potential impact of quicker than expected payments. This will have the most significant impact on the tails of the distribution, which is often the portion we are the most interested in for determining risk transfer. While introducing variability into a payment pattern may be too complicated for the benefit it provides, it is important to at least consider this risk as you complete your analysis.

### 3.3.4 Loss Distribution

Loss distributions are often based on previous company experience, industry benchmarks, pricing information, or judgment, or all of these factors. For transactions covering large books of business with several years of historical experience available, selecting a loss distribution can be as easy as fitting a distribution to the available data. For books of business with low premium volume or immature loss experience, selecting the appropriate distribution can be much more difficult. Even for mid-size books of business it can be difficult to select a loss distribution because risk transfer testing focuses on the right tail of the distribution. This concern is compounded when working with high-level excess of loss contracts. However the loss distribution is determined, it is important to test the reasonableness of the tail results. Having an adequate comfort level with the tail results produced by the selected distribution is crucial.

When a company does not have enough historical loss experience to base a distribution upon, it is typical to turn to industry benchmarks or the information used to price the reinsurance contract. The use of pricing assumptions in risk transfer analyses is discussed later in the paper. Industry data can provide a starting point for overall expected loss ratios or frequencies and severities. However, it is difficult to select a distribution and develop a variance using only industry results. Individual companies can experience significantly higher variance in their loss than the industry as a whole. In

these instances it may be necessary to rely on some generally accepted distributions. Likewise a selected variance will be required. This selection will depend on a number of considerations, such as the size of the book of business, the type of coverage, the type of business being underwritten, and a variety of other factors.

### 3.3.5 Parameter Risk

A key consideration for any simulation model is parameter risk. Cash flow simulations for risk transfer are no different. As we previously discussed, selecting parameters to simulate future loss payments is a difficult process and it is important to account for the risk that the selected parameters or model are incorrect. Accounting for this increased variability in your simulation will increase the likelihood that your analysis will determine risk transfer is present. This is a reasonable result when you consider that the reinsurer is clearly accepting this same parameter risk when entering into the contract.

Parameter risk can be accounted for explicitly or implicitly. Implicitly it can be reflected in a slightly higher expected loss selection or in an increase to the expected volatility of losses. In the case of explicit recognition it is common to see a probability distribution assigned to key parameters and then to have them simulated also. This provides some variability to the selected parameters to help account for parameter risk. While this is a more concrete method than including it implicitly, it also depends on judgment and the selection of more distributions and parameters. There is not much information available about incorporating parameter risk into cash flow simulation models. Currently, there are no widely accepted methods and the costs of more complicated techniques may tend to outweigh the benefits.

Parameter risk is going to have the greatest impact on the losses simulated, but it can affect other facets of the analysis as well. When premium projections must be estimated based on the treaty terms, there is some additional parameter risk, but it will rarely affect the result of the analysis. There is also parameter risk in the discounting function used in the analysis. However, not all of that risk should be accounted for in a risk transfer analysis.

The majority of the parameter risk in discounting comes from two key inputs, the payment pattern and the interest rate. As we previously discussed, there is real risk in not incorporating an accurate payment pattern. This risk relates to timing risk, which is a part of insurance risk and should be considered in a risk transfer analysis. The second piece of the discount, the interest rate, however, should not contribute any risk, parameter or process, to the analysis. SSAP 62 clearly

states that "the possibility of investment income varying from expectations is not an element of insurance risk."

Because there are no widely accepted methods and because the methods available either require some arbitrary selections or may add more cost than benefit to the analysis, we do not feel that parameter risk must be explicitly shown in a risk transfer analysis. We would strongly encourage practitioners to at least include it implicitly if not explicitly. Regardless, we recommend documenting the existence of parameter risk and, whether or not it is included in the analysis, documenting how it could affect the results. This documentation can be beneficial if another actuary needs to review the analysis. More importantly, parameter risk is too important to entirely exclude from both the analysis and the report when the analysis may be directly used to make the decision on risk transfer.

### 3.3.6 Use of Pricing Assumptions

One potential resource, if available, for selecting parameters for small or immature books of business is the reinsurance pricing assumptions. This concept is very attractive since a properly priced reinsurance agreement is likely to be based on an appropriate expected loss assumption with an appropriate risk load and payment pattern. While we are often more interested in a loss distribution than just the expected losses for testing risk transfer, these assumptions can help provide some of the necessary parameters for our simulation.

Pricing assumptions can also be helpful in parameter selection since they reflect how risky the market views a particular piece of business. The reinsurance market may provide a better indication of the amount of risk involved in a small new primary company searching for reinsurance than what you could find based on industry benchmarks. Of course, this market-driven view of a reinsurance contract is also one of the biggest drawbacks to using pricing assumptions. Simulation testing for risk transfer should be based on expected loss experience and should not be market-driven. Pricing assumptions should only be used in selecting parameters when reasonable. A hard insurance market with higher premiums does not mean that companies do not need to meet the same risk transfer standards. Because of this, when available, the underlying data that the pricing assumption was based upon can be even more beneficial than the parameters actually used in the pricing of the reinsurance.

To correctly apply the expected loss assumptions from a pricing model to a risk transfer analysis, it is important to properly account for the risk load in the pricing. In many reinsurance contracts,

risk load is a significant piece of the puzzle. It may be implicitly added into the expected loss ratio or explicitly stated in the development of the rate. If it is implicit in the expected losses, it is important not to blindly carry forward the expected losses without recognizing the extra loaded amount. If it is explicitly stated, intuitively there should be a relationship between this risk load amount and the level of risk inherent in the underlying coverage. While this risk load reflects the amount of variability the reinsurer anticipates in the contract, it is not easy to translate this load into a variance for your loss distribution. However, it is worthwhile to at least consider the size of this risk load when selecting the loss distribution and variance.

Another caveat to remember when using pricing information to select parameters for risk transfer testing is that while both practices are generally aimed at determining expected future losses, they both are doing so for very different reasons. The differences in intent can lead to different approaches and selections. Notably, when pricing a reinsurance contract, it might be considered prudent to make conservative selections. This might lead to slightly higher expected losses and risk load. These selections would not be considered conservative in a risk transfer analysis. Selecting higher expected losses and increasing the expected variability would lead to over-detecting risk transfer. For risk transfer testing the more conservative approach would be to use lower expected losses and variability. These differences in approach are important to remember anytime you are relying on assumptions from an analysis developed for a different purpose.

While pricing assumptions can clearly provide valuable input to any risk transfer analysis, it should also be clear that there are variety of reasons one may deviate from them. This is true even for reinsurance analysts who may be testing the same contracts they priced. These two exercises might require different assumptions about the modeled losses. Loss models used for pricing are often optimized based on their projections of all the potential results. Risk transfer, on the other hand, requires a model that is optimized on the right tail of the distribution. Due to this distinct difference in focus, the resulting selections for loss distribution and/or parameters may not be the same for pricing and risk transfer analysis.

### 3.3.7 Commutation Clauses

As previously discussed, any mandatory fees to delay a required commutation should be included when determining if risk transfer is present. Commutation clauses should be read carefully to determine their entire impact on risk transfer. While commutation clauses do not often prohibit a contract from exhibiting risk transfer, it is important to recognize that any commutation requirement

does restrict the amount of risk transferred. It is not uncommon for these clauses to set a predetermined date for commutation based on an actuarial determination of the unpaid claim estimates at that time. While this is a fair method for completing a commutation, it does require the ceding company to reassume the risk of any changes in the unpaid claims after the predetermined commutation date. This clearly returns some risk back to the ceding company, limiting the amount of risk transferred in the original transaction.

If a commutation clause states that the future commutation will be based on a mutually agreed upon value or on an actuarial determination, the payment pattern used to discount losses in the risk transfer analysis may not need to be adjusted. While the commutation may result in an earlier payment than anticipated by the reinsurer for any outstanding claims, the payment should reflect the present value of expected payments at that time and the impact on the original payment pattern assumption should be minimal. If there are explicit rules for the calculation of the value of outstanding claims at commutation, these rules may need to be included in the original analysis and may affect the selected payment pattern.

## 4. CONCLUSIONS

It is important to remember that none of the methods to test risk transfer provide a "bright line" indicator for its existence. While actuaries have the necessary skill set to evaluate the existence of risk transfer in any reinsurance contract, the final decision belongs to the CEO or CFO of the company. Risk transfer analysis, and more specifically ERD, is a tool to aid them in that decision. If a risk transfer analysis produces a borderline result, such as an ERD of 0.95% or 1.05%, it will likely require further consideration and documentation to show that risk transfer does or does not exist in the contract being reviewed. Risk transfer testing is a principle-based exercise and the existence of risk transfer is entirely based upon there being a "reasonable chance of a significant loss" to the reinsurer. ERD and other methodologies are just tools to help determine if a contract meets this standard.

**Acknowledgment**

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**Abbreviations and notations**

AAA, American Academy of Actuaries
ERD, Expected Reinsurer Deficit
RAS, Reinsurance Attestation Supplement
CAS, Casualty Actuarial Society
FAS 113, Financial Accounting Standard No. 113
SSAP, Statement of Statutory Accounting Principles

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ACME Insurance
Quota Share
Risk Transfer - Simulation Analysis



Table 1 - Summary of Terms - Contract #1

| | |
|---|---|
| Inception Date | 1/1/2008 |
| Estimated Subject Premium | 10,000,000 |
| Reinsurance Premium | 8,000,000 |
| | |
| Cession | 80.0% |
| Ceding Commission | 25.0% |
| Profit Commission | |
| Loss Ratio | 66.0% |
| Profit Swing | 5.0% |
| Loss Ratio Cap | 100.0% |
| | |
| *Reinsurers Expenses as % of Prem.* | |
| *Brokerage* | *2.0%* |
| *Underwriting Exp.* | *2.0%* |
| *Federal Excise Taxes* | *1.0%* |

Table 2 - Simulation Assumptions

| | |
|---|---|
| Model Loss Ratio excluding ALAE | |
| Lognormal distribution | |
| Mean | 65.0% |
| Standard Deviation | 20.0% |
| Minimum Loss | 45.0% |

Table 3 - Results

| | | |
|---|---|---|
| Frequency | Sum of Col (10) / 10,000 | 19.7% |
| Severity | Sum of Col (9) / Sum of Col (10) | -14.5% |
| ERD as a % of Reins Prem. | ERD / Reinsurance Premium | -2.85% |

Table 4 - Percentiles

| Percentile | Loss Ratio | NPV Of Reinsurer Profit / Loss |
|---|---|---|
| 75% | 95.9% | 4.1% |
| 80% | 99.7% | 0.3% |
| 90% | 110.5% | -10.5% |
| 95% | 118.5% | -18.5% |

| Iteration # | Direct Loss and LAE Ratio (1) | Direct Losses and LAE (2) | Ceded Losses and LAE (3) | NPV Treaty Losses (4) | Ceding Commission (5) | Profit Commission (6) | NPV Treaty Premium Net of Ceding & Profit Comm (7) | NPV Reinsurer Gain/Deficit (8) | NPV Reinsurer Deficit as a % of NPV of Treaty Premium (9) | Frequency of Deficit (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 63% | 6,342,599 | 5,074,079 | 4,649,828 | 2,000,000 | 164,736 | 5,724,700 | 1,074,871 | 0.0% | 0 |
| 2 | 58% | 5,792,740 | 4,634,192 | 4,246,721 | 2,000,000 | 320,000 | 5,578,412 | 1,331,691 | 0.0% | 0 |
| 3 | 52% | 5,175,628 | 4,140,502 | 3,794,309 | 2,000,000 | 320,000 | 5,578,412 | 1,784,103 | 0.0% | 0 |
| 4 | 45% | 4,500,000 | 3,600,000 | 3,298,999 | 2,000,000 | 320,000 | 5,578,412 | 2,279,413 | 0.0% | 0 |
| 5 | 45% | 4,500,000 | 3,600,000 | 3,298,999 | 2,000,000 | 320,000 | 5,578,412 | 2,279,413 | 0.0% | 0 |
| 6 | 80% | 7,973,888 | 6,379,111 | 5,845,744 | 2,000,000 | 0 | 5,879,913 | 34,169 | 0.0% | 0 |
| 7 | 45% | 4,500,000 | 3,600,000 | 3,298,999 | 2,000,000 | 320,000 | 5,578,412 | 2,279,413 | 0.0% | 0 |
| 8 | 53% | 5,307,827 | 4,246,262 | 3,891,226 | 2,000,000 | 320,000 | 5,578,412 | 1,687,186 | 0.0% | 0 |
| 9 | 69% | 6,928,552 | 5,542,842 | 5,079,397 | 2,000,000 | 0 | 5,879,913 | 800,516 | 0.0% | 0 |
| 10 | 45% | 4,500,000 | 3,600,000 | 3,298,999 | 2,000,000 | 320,000 | 5,578,412 | 2,279,413 | 0.0% | 0 |
| 9,990 | 48% | 4,783,431 | 3,826,745 | 3,506,785 | 2,000,000 | 320,000 | 5,578,412 | 2,071,627 | 0.0% | 0 |
| 9,991 | 113% | 11,284,849 | 9,027,879 | 7,331,108 | 2,000,000 | 0 | 5,879,913 | -1,451,196 | -24.7% | 1 |
| 9,992 | 55% | 5,470,802 | 4,376,642 | 4,010,705 | 2,000,000 | 320,000 | 5,578,412 | 1,567,707 | 0.0% | 0 |
| 9,993 | 86% | 8,606,365 | 6,885,092 | 6,309,420 | 2,000,000 | 0 | 5,879,913 | -429,507 | -7.3% | 1 |
| 9,994 | 122% | 12,230,549 | 9,784,439 | 7,331,108 | 2,000,000 | 0 | 5,879,913 | -1,451,196 | -24.7% | 1 |
| 9,995 | 54% | 5,350,772 | 4,280,618 | 3,922,709 | 2,000,000 | 320,000 | 5,578,412 | 1,655,703 | 0.0% | 0 |
| 9,996 | 91% | 9,128,508 | 7,302,806 | 6,692,208 | 2,000,000 | 0 | 5,879,913 | -812,295 | -13.8% | 1 |
| 9,997 | 81% | 8,050,084 | 6,440,067 | 5,901,604 | 2,000,000 | 0 | 5,879,913 | -21,691 | -0.4% | 1 |
| 9,998 | 106% | 10,578,897 | 8,463,117 | 7,331,108 | 2,000,000 | 0 | 5,879,913 | -1,451,196 | -24.7% | 1 |
| 9,999 | 79% | 7,892,701 | 6,314,161 | 5,786,225 | 2,000,000 | 0 | 5,879,913 | 93,688 | 0.0% | 0 |
| 10,000 | 83% | 8,319,856 | 6,655,885 | 6,099,377 | 2,000,000 | 0 | 5,879,913 | -219,464 | -3.7% | 1 |

Column
(1) Based upon the model assumptions in Table 2
(2) Estimated Subject Premium x Col (1)
(3) Cession Percent x Col (2)
(4) Minimum of Col (3) or Loss Ratio Cap x Reinsurance Premium, multiplied by Page 3 Col (2)
(5) Reinsurance Premium x Ceding Commission
(6) 1% for every 1% of ultimate loss that is lower than 66%, maximum adjustment 5%
(7) Total Page 2 Col (6) + Col (6) / [(1 + Discount Rate)^2.0833], assumes profit commision is paid 2 years one month after policy effective date
(8) Col (7) - Col (4)
(9) If Col (8) < 0 then Col (8) / Col (7) else 0
(10) If Col (8) < 0 then 1 else 0

ACME Insurance
Quota Share
Risk Transfer - Simulation Analysis
Premium Discount Factor - Exclude Profit Share

Discount Rate Assumption:

| | | |
|---|---|---|
| (1) | Interest Rate | 2.9% |
| (2) | Discount Factor | 0.980 |

| Time of Payments in Months (3) | Premium (4a) | NPV of Premium (4b) | Ceding Commission (5) | Premium Net of Ceding Commission (6) | Discounted Premium Net of Ceding Commission (7) |
|---|---|---|---|---|---|
| 4 | 2,000,000 | 1,981,032 | -500,000 | 1,500,000 | 1,485,774 |
| 7 | 2,000,000 | 1,966,925 | -500,000 | 1,500,000 | 1,475,193 |
| 10 | 2,000,000 | 1,952,917 | -500,000 | 1,500,000 | 1,464,688 |
| 13 | 2,000,000 | 1,939,010 | -500,000 | 1,500,000 | 1,454,257 |
| Total | 8,000,000 | 7,839,884 | -2,000,000 | 6,000,000 | 5,879,913 |

| Column/Row | Note |
|---|---|
| (1) | Page 4, Row (12) |
| (2) | Total Col (7) / Total Col (6) |
| (3) | Month premium is due, assumes quarterly payments due one month after quarter end. |
| (4a) | Reinsurance Premium divided by 4, assumes quarterly payments. |
| (4b) | Col (4a) / {[1 + Col (1)] ^ (Col (3) / 12)} |
| (5) | Ceding Commission divided by 4, assumes quarterly payments. |
| (6) | Col (4a) + Col (5) |
| (7) | Col (6) / {[1 + Col (1)] ^ (Col (3) / 12)} |

ACME Insurance
Quota Share
Risk Transfer - Simulation Analysis
Discount Factor



Discount Rate Assumption:

| | | |
|---|---|---|
| (1) | Interest Rate | 2.9% |
| (2) | Discount Factor | 0.916 |

| Years of Maturity | % of Ultimate Paid Cum. | Incr. | Discounted Payment |
|---|---|---|---|
| (3) | (4) | (5) | (6) |
| 0 | 0.00% | 0.00% | 0.00% |
| 1 | 20.00% | 20.00% | 19.72% |
| 2 | 42.00% | 22.00% | 21.08% |
| 3 | 60.00% | 18.00% | 16.76% |
| 4 | 70.00% | 10.00% | 9.05% |
| 5 | 77.50% | 7.50% | 6.59% |
| 6 | 82.00% | 4.50% | 3.85% |
| 7 | 90.00% | 8.00% | 6.64% |
| 8 | 95.00% | 5.00% | 4.04% |
| 9 | 100.00% | 5.00% | 3.92% |

| Column/Row | Note |
|---|---|
| (1) | Page 4, Row (12) |
| (2) | Sum Col (6) / Sum of Col (5) |
| (4) | Industry Benchmarks |
| (5) | Current (4) - prior (4) |
| (6) | Col (5) discounted to time zero |

ACME Insurance
Quota Share
Risk Transfer - Simulation Analysis
Interest Rate



| Years of Maturity | % of Ultimate Losses Paid Cum. | % of Ultimate Losses Paid Incr. | Time of Payments in Months | % of Ultimate Premiums Paid Cum. | % of Ultimate Premiums Paid Incr. | Daily Treasury Years of Maturity | Daily Treasury Yield Curve Rates |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 0 | 0.00% | 0.00% | 4 | 25.00% | 25.00% | 0.5 | 3.32% |
| 1 | 20.00% | 20.00% | 7 | 50.00% | 25.00% | 1.0 | 3.17% |
| 2 | 42.00% | 22.00% | 10 | 75.00% | 25.00% | 2.0 | 2.88% |
| 3 | 60.00% | 18.00% | 13 | 100.00% | 25.00% | 3.0 | 2.89% |
| 4 | 70.00% | 10.00% | | | | 5.0 | 3.28% |
| 5 | 77.50% | 7.50% | | | | 7.0 | 3.54% |
| 6 | 82.00% | 4.50% | | | | 10.0 | 3.91% |
| 7 | 90.00% | 8.00% | | | | | |
| 8 | 95.00% | 5.00% | | | | | |
| 9 | 100.00% | 5.00% | | | | | |
| 10 | 100.00% | 0.00% | | | | | |

| | | |
|---|---|---|
| (9) | Duration of Loss Payments | 3.14 |
| (10) | Duration of Premium Payments | 0.71 |
| (11) | Duration of Net Cash Flows | 2.43 |
| (12) | Selected Interest Rate | 2.9% |

| Column/Row | Note |
|---|---|
| (2) | Page 3 Column (4) |
| (3) | Page 3 Column (5) |
| (4), (5), (6) | Based on premium payments on Page 2 |
| (8) | Rates from U.S. Treasury Securities as of 1/2/08 |
| (9) | Based on loss payment pattern in Column (3) |
| (10) | Based on premium payment pattern in Column (6) |
| (11) | Row (9) - Row (10) |
| (12) | Selected |

ACME Insurance
Excess of Loss
Risk Transfer - Simulation Analysis



Table 1 - Summary of Terms - Contract #2

| | |
|---|---|
| Inception Date | 1/1/2008 |
| Estimated Subject Premium | 10,000,000 |
| Provisional Reinsurance Rate | 8.50% |
| Provisional Premium | 800,000 |
| Maintenance Fee | 50,000 |
| | |
| Retention | 250,000 |
| Limit | 250,000 |
| Swing Rate | |
| Swing Loss Ratio | 75.0% |
| Minimum Rate | 6.00% |
| Maximum Rate | 11.00% |
| | |
| *Reinsurers Expenses as % of Prem.* | |
| *Brokerage* | *10.0%* |
| *Underwriting Exp.* | *7.0%* |
| *Federal Excise Taxes* | *1.0%* |
| | |
| Modeled Loss Ratio | 120.0% |

Table 2 - Simulation Assumptions

| | | | |
|---|---|---|---|
| Model Severity ALAE | | Model Frequency | |
| Lognormal distribution | | Poisson distribution | 250 |
| Mean | 30,000 | | |
| | | | |
| Standard Deviation | 120,000 | | |
| Minimum Loss | 0 | | |

Table 3 - Results

| | | |
|---|---|---|
| Frequency | Sum of Col (10) / 10,000 | 10.4% |
| Severity | Sum of Col (9) / Sum of Col (10) | -20.1% |
| ERD as a % of Reins Prem. | ERD / Reinsurance Premium | -2.09% |

Table 4 - Percentiles

| Percentile | NPV Of Reinsurer Loss |
|---|---|
| 75% | 0.0% |
| 80% | 0.0% |
| 90% | -1.0% |
| 95% | -16.5% |

| Claim # | Direct Loss and LAE (1) | Ceded Loss and LAE (2) | NPV Ceded Loss and LAE (3) | Provisional Premium (4) | Experience Adjustment (5) | Commutation Fee (6) | Final Premium and Fees (7) | NPV Treaty Premium Net of Rate Swing (8) | NPV Reinsurer Gain/Deficit (9) | NPV Reinsurer Deficit as a % of NPV of Treaty Premium (10) | Frequency of Deficit (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,758 | 0 | 0 | 800,000 | 250,000 | 50,000 | 1,100,000 | 1,056,133 | 204,656 | 0.00% | 0 |
| 2 | 3,566 | 0 | 0 | | | | | | | | |
| 3 | 2,762 | 0 | 0 | | | | | | | | |
| 4 | 15,271 | 0 | 0 | | | | | | | | |
| 5 | 5,648 | 0 | 0 | | | | | | | | |
| 6 | 11,158 | 0 | 0 | | | | | | | | |
| 7 | 39,765 | 0 | 0 | | | | | | | | |
| 8 | 326,745 | 76,745 | 68,050 | | | | | | | | |
| 9 | 36,936 | 0 | 0 | | | | | | | | |
| 10 | 10,469 | 0 | 0 | | | | | | | | |

Column

(1) Based upon the model assumptions in Table 2
(2) Ceded loss based upon the treaty terms
(3) Col (2) x Appendix B, Page 3
(4) Estimated subject premium times provisional reinsurance rate
(5) Actual modeled loss ratio minus swing loss ratio + provisional reinsurance rate; subject to Maximum and Minimum rate
(6) Assumes fee to commute under all scenerios
(7) (4) + (5) + (6)
(8) Page 2 Col (4b) + Col (5) / [(1 + Interest rate) ^ 2.0833] + Col (6) / [(1 + Interest rate) ^ 5.0833]
(9) Col (8) - sum of Col (3)
(10) If Col (9) < 0 then Col (9) / Col (8) else 0
(11) If Col (9) < 0 then 1 else 0

ACME Insurance
Excess of Loss
Risk Transfer - Simulation Analysis
Premium Discount Factor - Exclude Profit Share

Discount Rate Assumption:

| | | |
|---|---|---|
| (1) | Interest Rate | 3.5% |
| (2) | Discount Factor | 0.976 |

| Time of Payments in Months (3) | Premium (4a) | NPV of Premium (4b) |
|---|---|---|
| 4 | 200,000 | 197,720 |
| 7 | 200,000 | 196,027 |
| 10 | 200,000 | 194,348 |
| 13 | 200,000 | 192,684 |
| Total | 800,000 | 780,778 |

| Column/Row | Note |
|---|---|
| (1) | Selected |
| (2) | Total Col (4b) / Total Col (4a) |
| (3) | Month premium is due, assumes quarterly payments due one month after quarter end |
| (4a) | Reinsurance Premium divided by 4, assumes quarterly payments |
| (4b) | Col (4a) / {[1 + Col (1)] ^ (Col (3) / 12)} |

ACME Insurance
Excess of Loss
Risk Transfer - Simulation Analysis
Discount Factor



Discount Rate Assumption:

| | | |
|---|---|---|
| (1) | Interest Rate | 3.5% |
| (2) | Discount Factor | 0.887 |

| Years of Maturity | % of Ultimate Paid Cum. | Incr. | Discounted Payment |
|---|---|---|---|
| (3) | (4) | (5) | (6) |
| 0 | 0.00% | 0.00% | 0.00% |
| 1 | 19.27% | 19.27% | 18.94% |
| 2 | 42.02% | 22.75% | 21.61% |
| 3 | 58.15% | 16.13% | 14.80% |
| 4 | 68.72% | 10.57% | 9.37% |
| 5 | 75.41% | 6.69% | 5.73% |
| 6 | 79.71% | 4.29% | 3.55% |
| 7 | 82.97% | 3.27% | 2.61% |
| 8 | 85.24% | 2.27% | 1.76% |
| 9 | 87.01% | 1.76% | 1.32% |
| 10 | 88.41% | 1.40% | 1.01% |
| 11 | 95.50% | 7.09% | 4.94% |
| 12 | 100.00% | 4.50% | 3.03% |
| 13 | 100.00% | 0.00% | 0.00% |

| Column/Row | Note |
|---|---|
| (1) | Selected |
| (2) | Sum Col (6) / Sum of Col (5) |
| (4) | Industry workers compensation benchmarks |
| (5) | Current (4) - prior (4) |
| (6) | Col (5) discounted to time zero |

# GOVERNMENT INSURERS STUDY NOTE
APRIL 2017

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## INTRODUCTION

Nyce [1] provides an excellent introduction to government insurance including the five main reasons for government insurance, which are summarized in this study note.

Both the federal and state governments are involved in insurance as regulators of insurance companies and as insurers. As insurers, they participate in a number of insurance programs either as the sole insurer, in partnership with insurance companies or in competition with insurance companies. Several major programs that are discussed elsewhere in the syllabus include the National Flood Insurance Program, Social Security, Guaranty Funds, FAIR plans, TRIA, and various state Auto Plans. In this study note, we will discuss state and federal involvement in Workers Compensation Insurance, Crop Insurance, and Unemployment Insurance.

Is government participation in insurance necessary? According to Greene and Weining, there are several reasons for government participation in insurance:

- Filling insurance needs unmet by private insurance
- Compulsory purchase of insurance
- Convenience
- Greater efficiency
- Social purposes

### *Filling Insurance Needs Unmet by Private Insurance*

According to Nyce [1] and Greene [2], one justification for government participation in insurance is the residual market philosophy, with governments offering insurance in markets unserved by private insurance; either because of unavailability or affordability. One implication of the residual market philosophy is that government requirements for insurability are different from private insurers' requirements. A government may step into situations in which private insurers do not because the government has the financial capacity to subsidize losses, either by directly taxing taxpayers for the insurance program even those who do not benefit from the program, or indirectly by charging less than the actuarial cost of providing insurance coverage for the exposure and making up the difference through government-provided funds (crop / flood). There are strong

arguments, both pro and con, as to whether a government should provide this type of subsidy.

Begun in 1968, the Federal Crime Insurance Program was intended to provide coverage for homeowners and small businesses located in neighborhoods with high crime rates, primarily because private insurance for burglary or robbery was not available at affordable rates for these risks. With proper loss prevention methods, this insurance was available from the private market at rates less than the government rates and the Federal Crime Insurance Program expired in 1995.

Crop insurance and Flood insurance are available and affordable only because of subsidies from the federal government.

*Compulsory Purchase of Insurance*

Government may require individuals or businesses to obtain insurance to meet social responsibilities. A driver who causes an automobile accident is responsible for repairing the damage or injury caused by the accident. Many people would not have the financial resources to meet this obligation without insurance protection. An employer is deemed responsible for injury to an employee regardless of fault. Again, without insurance protection an employer may not be able to meet this obligation. Without a compulsory insurance requirement, some persons who have suffered injury or loss may not have the costs of repairing the damage to their property or their medical costs covered by the person responsible for these costs.

Since purchase of insurance such as workers compensation or automobile insurance may be compulsory, some state legislatures felt obliged to offer the insurance to individuals who could not find a private market [2]. The workers compensation state funds established in several states and the Maryland Automobile Insurance Fund are examples of this philosophy. Another reason why some federal and state legislators believe that government should provide compulsory insurance is that private companies should make only limited profits, given the government guaranteed market. A government program would operate as a not-for-profit entity and the cost of the compulsory insurance would be lower than if offered by a for-profit insurer. In other non-insurance government mandated programs such as highway construction contracts, private organizations often service the program. Within a purely competitive market excessive profits cannot persist in the long run. Private insurance seems to work for most states in supplying the vast majority of the public with compulsory insurance such as workers compensation and auto insurance.

While workers compensation insurance is administered by a monopolistic state fund in a few states, most states have private companies that offer workers compensation insurance, sometimes in competition with state-run funds that will provide coverage to anyone who applies for coverage to the fund, sometimes referred to as “take all comers.” For those states without a state fund, and some with a state fund, there is usually some

other form of residual market that provides coverage to those who are unable to find the required coverage with a private insurer.

For compulsory auto insurance, government insurance is normally not the answer; so provisions are in place to make auto insurance available for those unable to buy insurance on the open market. Sometimes these alternate sources also provide the coverage at costs below the actuarial cost of providing the coverage. In these situations, insurers, other insureds or taxpayers subsidize part of the cost of the coverage for high risk drivers. Hamilton and Ferguson [3] discuss these provisions, which include assigned risk plans, reinsurance facilities, and joint underwriting associations depending on the state. Maryland has the only state-owned auto insurance company.

*Convenience*

Some government insurance programs are established because it appears to be easier for the government to set up a program quickly as a legislature can appropriate funding for the new program, whereas the private market may take longer to find the necessary funding [3]. A government program may also be already set up to provide certain types of services needed by the insurance program. These services include loss mitigation development and funding, as the Florida legislature did when establishing the Florida Hurricane Catastrophe Fund.

Using government insurance programs only for convenience may not be justified if the private market is willing and able to provide a reasonable market.

*Greater Efficiency*

One argument in favor of government insurance is that there is greater efficiency than in the private market [2]. Some government insurance programs may be established because of the belief that government can provide the service at a lower cost than the private market. However, the costs of providing insurance, including the costs of keeping records, providing consumer education, issuing policies and paying claims, exist even in government insurance programs. Services such as explaining coverages, keeping records, and handling claims questions are still provided by customer service representatives (who must be compensated). The cost savings claimed for government insurance programs might be overstated because other government departments may perform services on behalf of the government insurance entity that are usually performed by insurance companies, including appraising property, administering claims, or making investments.

*Social Purposes*

The use of government insurance to achieve social purposes may be the main reason for government insurance programs [3]. Some feel that these social purposes can only be fully achieved within government-owned insurance programs. For example, rehabilitation and vocational training of injured workers are important goals of a workers compensation

system and requirements for loss mitigation in catastrophe insurance plans may be more easily accomplished under government insurance programs. Can private insurance programs accomplish the same goals? If Social Security benefits were made available through a welfare program for the truly needy elderly and disabled while pension plans, 401(k)s, life insurance and disability insurance were to be used to fill the needs of others, would adequate protection for retirement and the disabled be available? If building codes and zoning requirements could be altered to prevent construction in flood-prone areas would private insurers be willing to provide flood coverage? In this scenario, government flood insurance would still be needed for existing buildings in the flood zones, but the need for government flood insurance on new construction would be reduced.

*Level of Government*

The government (either state or federal) can be involved in three levels as either exclusive insurer, partner with private insurers or as a competitor to private insurers.
As an exclusive insurer the government functions as a primary insurer by collecting premiums, providing coverage and paying all claims and expenses. An example of this at the federal level is Social Security and at the state level with some state government-run workers compensation programs.

In partnership with private insurers the government offers reinsurance coverage on specific loss exposures for which the private insurer may retain only a portion of the loss. Examples of this at the federal level are National Flood insurance program, Terrorism Risk Insurance Program and Federal Crop insurance. On the state level this includes several programs to address residual markets where the insured cannot find coverage on the open market. Examples of this are Fair Access to Insurance Requirements (FAIR) plan, Workers Compensation, Windstorm plans and Residual Auto Plans.

In some cases the states operate in direct competition to private insurers such as in the Workers Compensation market in some states.

Detail of the various government insurance plans are provided in this document or in other readings on the Syllabus.

*Evaluation of Government Insurance Programs*

How well have the federal and state governments performed in providing insurance? According to Greene [2] the questions to be asked are:

- Is the provision of the insurance by the government necessary or does it achieve a social purpose that cannot be provided by private insurance?
- Is it insurance or a social welfare program? Social welfare is designed to provide benefits to qualified people based on demonstrable need for assistance without any payment or contribution by those receiving assistance. These benefits are usually

financed by general tax resources. The public welfare programs are an example of social welfare.

- Is the program efficient, is it accepted by the public?

Based on experience in 2004, 2005 and 2012 how is the Federal Flood Insurance Program performing? The rates don't seem to be actuarially sound; insurance is usually only purchased if required by law or mortgage companies; people who do not buy flood insurance seem to be getting federal disaster assistance. With appropriate rates, enforceable building codes, up-to-date flood maps, and available reinsurance could private insurance companies provide flood insurance?

In the following sections, we will discuss several government insurance programs, how they work, their origin and purpose, and their effectiveness.

## CROP INSURANCE

To help farmers recover from the Great Depression and the Dust Bowl, in 1938 the federal government created the Federal Crop Insurance Corporation (FCIC), a wholly owned corporation of the U.S. Department of Agriculture (USDA), to oversee the newly created federal crop insurance program. The initial program, intended to provide farmers protection against low yields, was limited to a few major crops (wheat and corn) in the main producing areas [4] and was not successful due to high costs and low participation by farmers [5]. In 1980, Congress passed legislation that expanded the types of crops covered and the regions of the country in which the federal crop insurance was available. To encourage participation the 1980 Federal Crop Insurance Act also authorized a subsidy of the crop insurance premium. According to the Congressional Research Service, in 2014 farmers paid about 38 percent of the policy premium [6].

In the late 1980's and early 1990's, droughts, and wet and cool growing seasons resulted in Congress passing several disaster bills to assist farmers in recovering from these disasters. These disaster bills were still costly and competed with the insurance program, so in 1994, Congress made participation in the crop insurance program mandatory for farmers to be eligible for payments under price support programs, certain loans and other benefits. In addition, catastrophic coverage became available and the premium for this coverage was completely subsidized.

In 1994, the mandatory participation requirement was repealed, but farmers who accepted other types of benefits were required to purchase crop insurance. Participation in the crop insurance program increased significantly.

Multiple Peril Crop Insurance policies are a public-private partnership. Private insurers market and write crop insurance policies, which generally indemnify farmers if yields fall below a given baseline due to natural causes (drought, heat, cold, fire, wind, or flood). Some policies also provide protection if prices fall below a given level. The RMA sets

the rates for these policies and determines which crops can be insured in different parts of the country. The private insurer services the policies including adjusting and settling any claims resulting from the policies. The RMA acts as a reinsurer, reimbursing the participating insurers for losses in return for a portion of the premium. In addition, the federal government reimburses the private insurance companies for their operating and administrative costs. The premiums paid by farmers are subsidized by the federal government to reduce the cost to farmers and encourage farmers to participate in the program.

A farmer must elect to purchase multi-peril coverage prior to planting. The crop insurance subsidies may encourage farmers to purchase more coverage than they might if they paid the full price. A higher participation in the program provides better protection to farmers and may reduce requests for disaster assistance, but it also increases costs to taxpayers.

The Federal crop insurance program differs from most private insurance programs in that an insurer who participates in the Federal program must sell the coverage to any farmer at the rate set by the Federal government. Because the insurer cannot impose its own underwriting standards, judgment or desired rate level regardless of the risk, the risk sharing agreement between the federal government and insurance companies allows an insurer to transfer some liability associated with riskier policies to the government and retain profits or losses on less risky policies.

Some private insurers offer crop-hail insurance which is not part of the federal program. Unlike the multi-peril coverage, a crop-hail policy may be purchased at any time during the growing season. Many farmers purchase this coverage because hail can totally destroy a planted field.

Crop insurance is not mandatory. Farmers may choose whether to buy it, and for which crops. However, the RMA requires that if a farmer chooses to insure a particular field, he or she must insure *all* of his or her fields growing the same crop in the same county. This alleviates problems of adverse selection, since otherwise farmers would insure only their most loss-prone locations and the program would bear a higher loss ratio. In addition, farmers who choose to forego crop insurance are not eligible for payments for crop loss from federal disaster relief programs.

Supporters of federally backed crop insurance argue that it is necessary to bring stability to a very volatile but important sector of the American economy. Private crop insurance would definitely be more expensive (if the subsidy were removed), and might be substantially more expensive or even unavailable due to the risk of catastrophic losses over a large geographic region. Opponents have charged that crop insurance subsidies encourage agricultural over-production and encourage farming in marginal and disaster-prone areas, which harms the environment and increases general disaster relief costs.

WORKERS COMPENSATION INSURANCE

With the advent of the industrial revolution, new technology and machinery resulted in more industrial accidents. The only recourse an injured worker had was to sue their employer - a long, expensive process with an uncertain outcome. Workers compensation benefits evolved as a means by which employees injured on the job would be certain to have their injuries adequately taken care of by their employer without having to sue. Employers, as well as employees, benefited from the new system as the employer also exchanged an uncertain, potentially large payment, for a certain guaranteed benefit system.

Governments, both state and federal, participate in workers compensation insurance programs in a variety of ways. In some states, workers compensation insurance is only available through private insurance companies, while in other states it is only available from a state fund (an entity established by law to provide workers compensation insurance. ) In some states, a state fund may compete with private insurers. In all states, government and private insurers cooperate in providing workers compensation insurance as the benefits are defined by law, either state or federal, and unless there is an exclusive state fund, private insurers provide the insurance coverage.

Workers compensation programs covering most employees are enacted and administered at the state level in all fifty states, the District of Columbia and the five U.S. territories. Federal government employees and certain categories of workers, such as longshoremen or railroad workers, are covered by federal workers compensation programs.

**A) Federal Workers Compensation Programs**

Various federal programs compensate certain categories of workers for disabilities caused on the job and provide benefits to dependents of workers who die of work-related causes. The federal government works to ensure these programs perform well under the U.S. Office of Management and Budget and Federal Agencies. The following are some major federal programs:

1) The **Federal Employee Compensation Act (FECA)** provides compensation benefits to non-military, federal employees for disability due to personal injury sustained while in the performance of duty and for employment-related disease. It is administered by the Office of Workers' Compensation Programs (OWCP) in the U.S. Department of Labor.

The Act is the exclusive remedy for federal civilian employees who suffer occupational injury or illness. There is some claimant overlap with other federal programs; however, regulations generally bar the receipt of dual benefits for the same injury/illness and mandate the reduction in benefits to offset other sources of compensation.

The program's purpose is to return individuals to work while containing the costs of the system. Designed as a non-adversarial system (i.e., no judicial review and limited

employer ability to contest claims) the program limits administrative and litigation costs, which may account for a substantial share of payout in some systems.

2) The **Longshore and Harbor Workers' Compensation Act of 1927** requires employers to provide workers compensation protection for longshore, harbor, and other maritime workers who are injured or suffer occupational diseases while working on or near navigable water in the United States. These benefits are provided by employers by either procuring insurance coverage from private insurers or by qualifying to self-insure. In some special circumstances, such as second injuries or default in payment of claims by insurers or employers, benefits are paid by a special fund administered by the Department of Labor Employment Standards Administration, Division of Longshore and Harbor Workers' Compensation (DLHWC). The DLHWC is responsible for adjudicating disputed claims and ensuring that employers and carriers pay benefits.

The Act was created to provide workers' compensation coverage for categories of workers who were not seamen and were injured while working on or near navigable water in the United States and for which no state act coverage applied. Since the enactment of the Act, there have been questions regarding when coverage under the Act ends and state act coverage begins, particularly when the injury occurs "near" navigable water. In 1984 the scope of the program was amended in an attempt to clarify the extent to which shoreside coverage applied. However, about 40 states allow concurrent receipt of state and longshore benefits. The Act provides for the offset of compensation paid to individuals under any other workers compensation law for the same disability or death. The possibility of an injured worker pursuing either longshore benefits or state act benefits is an issue that employers need to be aware of so that they have adequate insurance protection for their exposure.

3) The **Black Lung Benefits Act** (BLBA) provides wage-replacement and medical benefits to coal miners who are totally disabled due to pneumoconiosis (black lung disease) and to eligible survivors.

The program was established in 1969 out of concern that black lung victims were not receiving adequate recompense from state workers compensation systems. States have sometimes been slow to recognize chronic occupational diseases such as black lung as compensable injuries. Coal miners frequently change employment, which made it difficult to assign responsibility for a chronic disease to a particular employer. In addition, the BLBA acts as a form of disability insurance, providing compensation to survivors and dependents over and above medical care and loss of earnings. Black lung victims do remain eligible for ordinary workers compensation benefits, but if an individual receives both state and federal benefits, the federal benefit is reduced by the full amount of the state benefit.

Federal benefits are paid by the Black Lung Trust Fund which is financed by coal mine operators through a federal excise tax. In years when payouts exceed revenues, the fund borrows from general government revenue. These deficits are intended to eventually be

paid back with interest. In 2008, however, the Trust Fund deficit had grown so large that Congress made a one-time appropriation to reduce the deficit out of general funds. The hope as of 2016 is that the deficit will eventually be paid down without further excise tax increases or appropriations from general revenue.

## B) State Workers Compensation Programs

The state government can act as a partner with private insurers, a competitor of private insurers, or an exclusive insurer.

### Partnership with Private Insurers

State programs vary concerning who is allowed to provide insurance, which injuries or illnesses are compensable, and the level of benefits. State laws prescribe workers compensation benefits, but these laws assign to employers the responsibility for providing benefits. Employers can obtain workers compensation coverage to provide benefits to their employees by purchasing insurance from a private carrier or a state workers compensation fund, depending upon the options available in their state. They can also use self-insurance in almost every state if they demonstrate the financial capacity to do so by meeting certain requirements.

Private insurers are allowed to sell workers compensation insurance in all but a few states and territories that have exclusive state funds. Where private insurers may sell workers compensation, a public-private partnership exists since the benefits are established by state law, but insuring those benefits is the role of private insurers.

### State Funds

With enactment of state workers compensation laws, the need for workers compensation insurance created its own set of problems, while solving others. Employers feared they would be forced out of business if refused coverage by insurance companies. They were also fearful that insurance carriers might impose excessive premium rates that would be a financial burden. High premium rates could negatively affect a state's economy and ultimately limit opportunities for employment. Another fear was that because the mandatory nature of the coverage reduces elasticity of demand, insurance rates might soar, enabling insurers to reap unfair profits. Some state legislators addressed these concerns by establishing state workers compensation insurance funds to provide a stable source of affordable insurance coverage.

Washington was the first state to adopt the state fund approach in 1911 and by the end of 1916, thirteen states had established state funds. As of 2016, a total of twenty- three states have state funds that provide workers compensation insurance [7].

In general, state funds are established by an act of the state legislature, have at least part of their board appointed by the governor, are usually exempt from federal taxes, and typically serve as the insurer of last resort – that is, they do not deny insurance coverage to employers who have difficulty purchasing it privately.

Among the twenty-three states that have state workers compensation funds, four have exclusive state funds and nineteen have competitive state funds. The four states with exclusive funds are North Dakota, Ohio, Washington and Wyoming. The South Carolina state fund is a hybrid; it is an exclusive insurer for state employees and is available to cities and counties to insure their employees, but it does not insure private employers.

**Competitive State Funds**

In states with competitive state funds [8], state funds sell workers compensation insurance, at least theoretically, in competition with private insurers in insuring and administrating the workers compensation laws. In some states, Oklahoma is one example, the state fund is not permitted to refuse coverage to an employer, no matter how undesirable the risk, so long as past and current premiums are paid. In this regard they are referred to as "insurers of last resort". In other states such as Oregon, the state fund does not operate as the insurer of last resort. The mission of the state fund is set out in the Oregon statute that authorizes the existence of the state fund. This mission is to "make insurance available to as many Oregon employers as inexpensively as may be consistent" with protecting the integrity of the Industrial Accident Fund and sound principle of insurance [9].

**Exclusive State Funds**

In states with exclusive state funds, private insurers are not permitted to provide workers compensation insurance and state funds enjoy the exclusive right to sell workers compensation insurance. All employers are required to procure their workers compensation insurance from the state fund, or, in some jurisdictions, an employer may also self-insure.

**Residual Markets**

In states without a state fund, or with a state fund that does not serve as an "insurer of last resort", it will sometimes happen that an applicant for workers compensation insurance is unable to obtain coverage. Private carriers are limited by regulation in the rates that they can charge. If they believe that the maximum rate will be inadequate for a particular insured, they simply decline to write the policy. This may be because the prospective insured has an inherently hazardous business model, or poor safety practices, or a poor or inadequate loss record.

If states took no action on behalf of such applicants, the applicants would have little choice but to go out of business. This would increase unemployment and impair tax revenues. As a result states without state funds have set up residual market mechanisms to act as insurers of last resort.

The details of this mechanism vary from state to state. Applicants generally enter the residual market after being declined by at least two private carriers. In some states such applicants are assigned to carriers based on their workers compensation market share, with the carriers writing policies and collecting premium and paying claims just as if they were serving the applicants voluntarily.

In other states, carriers reinsure undesirable applicants via a reinsurance pool, and profits or losses from the pool are shared among carriers in proportion to market share. In still other states, the state authorizes a Joint Underwriting Association to serve the residual market, and with carriers sharing on a pro-rata basis profit or loss. Note that these residual market mechanisms closely parallel the automobile liability residual market mechanisms described by Cook [10].

The market share within the residual market varies from state to state and year to year, depending on filed rate adequacy and the risk appetites of insurers. In 2014 the aggregate residual market share was about 8% within the states for which the National Council on Compensation Insurance (NCCI) collects data. The combined ratio for residual market business, over the last several years, has been running between 105% and 115% [11]. As one would expect, residual market business is generally written at a loss despite generally higher rate levels for residual market risks. This results in a higher combined ratio for workers compensation insurers, either directly as residual risks are assigned to carriers, or indirectly as reinsurance or JUA losses are pro-rated. The voluntary market effectively subsidizes the higher-risk residual market, despite higher rate levels for residual market risks.

## C) Evaluation of Workers Compensation Insurance

Private carriers remain the largest source of workers compensation benefits. In 2013, they accounted for 56% of benefits paid in the nation, with state funds at 15%, self-insurers at 23%, and the federal government at 6% [12]. The trend in the share of benefits paid by state funds has decreased in recent years, down from 20% in 2004.

Nevertheless, the state funds have created significant competition in the workers compensation insurance business in the states where they operate. State funds have a significant market share in virtually every state where they are located. In 2013, state fund market share (as measured by benefits paid) in competitive state ranged from 7% in Pennsylvania to 59% in Idaho [12].

Proponents of state funds argue that because the state funds are specialists in workers compensation they can be expected to offer more intensive levels of rehabilitation and

other services than some private insurers whose workers compensation plan is only one of several types of coverage offered. However, there are private insurers who also specialize in providing only workers compensation coverage and may offer the same level of service and expertise as the state funds.

State funds are, by law, designed to be self-supporting from their premium and investment revenue. Overhead expense ratios of both exclusive and competitive funds may be lower than expense factors for private carriers in part because of absence of some administrative costs such as agency commissions and other marketing costs. As nonprofit departments of the state, or as independent nonprofit companies, they are able to return dividends or safety refunds to their policyholders, just as some private insurers do. This further reduces the overall cost of workers compensation insurance both for the state fund as well as the private insurer that offers these types of programs [2] [3]. While lower administrative costs for state funds may reduce the cost of providing workers compensation coverage, the fact that more states have not created state funds, and some state funds have been privatized recently, suggests that private insurers are also able to provide this coverage in an efficient manner.

The evidence suggests that both state funds and private insurers are able to provide workers compensation coverage in an efficient manner.

**D) Interaction of Workers Compensation Insurance with Medicare**

***Background***

In 1965, Congress created the Medicare program to provide health insurance for elderly Americans. The authors of the law creating Medicare recognized that it might overlap with other private or government insurance programs—especially workers compensation insurance.

For example, a 67-year-old worker might be injured in a job accident. That worker would be entitled to have his or her medical costs reimbursed by his or her employer's workers compensation insurer. However, that worker, being more than 65 years of age, might also be eligible for Medicare. To save Medicare costs, Congress therefore stipulated that workers compensation insurance would be primary in such a case. Medicare would be secondary and would begin to pay only if and when workers compensation benefits were exhausted.

In 1980, Congress passed the Medicare Secondary Payer Act, which stipulated that Medicare was also secondary to liability insurance. For example, if an elderly American were injured by another driver in an auto accident, the responsible driver's insurance would be primary and Medicare secondary.

The 1980 act also introduced the notion of a "conditional payment". In many cases persons begin incurring medical costs before eligibility to collect insurance has been

determined. In such cases Medicare will make "conditional payments" to medical providers, subject to later reimbursement by an insurer subsequently determined to be primary.

In some cases workers compensation claims are closed via a settlement which provides compensation to the injured worker for anticipated *future* medical payments. These payments can also overlap with Medicare. For example, a 63-year-old worker may be injured on the job. That worker is not eligible for Medicare. However, the worker's claim may be closed with a settlement that allows for medical treatment anticipated to last five years. By the end of that time the worker will be Medicare-eligible.

Federal regulators therefore introduced (1989) the Medicare Set-Aside Allocation (MSA), in which all parties to a settlement would agree to "set aside" a portion of the workers' compensation or liability settlement to be used to pay for future medical costs related to the workers' compensation or liability injury. The MSA funds are primary over Medicare and are limited to services that are related to the injury that would be covered by Medicare after the injured party becomes Medicare eligible.

Despite these laws and regulations, the status of Medicare as secondary insurer remained mostly notional through the Twentieth Century. Medicare administrators simply did not know when Medicare eligible (or soon to be eligible) parties were collecting workers compensation or liability payments. In the absence of aggressive collection, parties had little incentive to agree to MSA's.

***Medicare Set-Aside Allocations since 2001***

This became increasingly untenable as Medicare costs rose due to medical cost inflation and longer life expectancy. In 2001 the Center for Medicare and Medicaid Services (CMS), which administers Medicare, established its first guidelines for the review and approval of MSA's. The implied threat was that, where MSA's were not submitted, or not approved, Medicare would refuse payment for future care, and be more aggressive in seeking reimbursement for past conditional payments.

Since 2001, the submission and approval process for MSAs has changed several times. The changes have generally been in the direction of making MSA approval more difficult. A new sub-industry of MSA consultants has emerged to assist Third Party Administrators and insurers to evaluate settlements for MSA requirements and gain the approval of CMS.

As of 2012, CMS will review all workers compensation MSA's where:

- The claimant is either a Medicare beneficiary and the settlement is greater than $25,000 or
- The claimant is expected to be Medicare eligible within 30 months of the settlement and the settlement or expected future medical costs and lost wages of the injury exceeds $250,000.

The CMS thresholds do not create a safe-harbor, so even smaller medical settlements should consider Medicare's interests.

In 2016, the CMS announced that it will also begin reviewing liability and no-fault insurance MSA's.

After an MSA is approved, the injured worker must comply with reporting requirements and use the MSA appropriately. Claimants must agree to pay their workers compensation-related medical bills, using an interest-bearing account, and to complete reporting of their payments before Medicare will make <u>any</u> payments for claim-related conditions.

CMS can reject or revise MSA proposals, increasing the estimated lifetime medical need, to assure that Medicare rarely becomes liable for claim-related expenses throughout the claimant's life. Two specific issues – pharmacy costs and life expectancy – are often cited as areas of concern. With Medicare Part D, pharmacy costs were added to Medicare. In 2009, CMS issued pharmacy guidelines for MSAs, which essentially priced drugs at the retail cost level without regard to negotiated price arrangements that the insurer may have. However, many drugs commonly used for pain management are not included in Medicare Part D.

Due to industry concerns [13], in May 2010 Medicare issued clarifying language that drugs which were not included in Medicare Part D did not need to be considered in a MSA. This reduced the prescription costs in MSAs and was hailed as a significant victory in the insurance industry.

Another issue which can raise the costs of a MSA is use of a "rated age" or impaired life expectancy versus the claimant's actual age. If a rated age is used, that means the injured person's life expectancy is less than normal which allows the settlement amount to be less than would be needed for an individual with a normal life expectancy. If CMS protocols for rated ages are not followed, CMS will recalculate the MSA using the claimant's actual age rather than the impaired life expectancy. Due to the nuances of CMS approval, many insurers use specialists to review their MSA proposals prior to submission to CMS and to shepherd the claim through the process. Use of specialists increases the administrative costs of settling such claims.

***<u>New Reporting Requirements since 2007</u>***

On December 29, 2007, President George W. Bush signed the "Medicare, Medicaid and SCHIP Extension Act of 2007" (MMSEA). This law sought to address the problem of CMS being unaware of primary payer responsibilities, whether or not a claim involved an MSA. The law requires claim payers, known as Responsible Reporting Entities (RREs), to report claim data to the CMS. Specifically, Section 111 of the act requires the providers of liability insurance (including self-insurers), no fault insurance and workers' compensation insurance (hereinafter "insurers") to determine the Medicare-enrollment

status of all claimants and report certain information about those claims to the Secretary of Health and Human Services, through the CMS.

The implementation of the reporting requirement was delayed, as regulations and technology issues were ironed out, but reporting became mandatory on January 1, 2011 for insurers with workers' compensation claims. Reporting of liability claims was phased in (with the largest claims first) beginning on January 1, 2012.

CMS uses the Section 111 data to assist Medicare in coordinating benefits and in uncovering potentially reimbursable claims. There are substantial penalties for non-compliance with the required reporting of claims - $1,000 per day per beneficiary for each day the insurer is out of compliance. This penalty is in addition to a "Double Damages Plus Interest" penalty that defendants (as primary payers) can be fined if Medicare's right to reimbursement is ignored in any settlement. This rule applies to settlements on or after October 1, 2010.

***Property/Casualty Actuarial Implications of the Recent Changes***

From 2008 through 2010 there may have been an increase in claim closings, lump-sum payments or settlement in advance of the Section 111 reporting deadline. Some RREs may have taken the opportunity to decrease the volume of relatively minor claims that would otherwise need to have the Medicare eligibility status of the claimant determined and reports made to CMS. For actuaries reviewing both insurers' and self-insurers' loss data, such claim activity can distort both paid and reported losses.

Slowdowns in claim settlement rates are sometimes attributed by Workers Compensation claims professionals to the CMS changes in procedures and increased emphasis on MSAs. CMS approval of MSAs generally takes 60 to 90 days, which can contribute to a slowdown in settlements. It is possible that some portion of increasing WC medical trends is due to MSAs. In the past, claim settlements may not have specifically identified medical vs. indemnity components and the settlement costs may have been entirely attributed to indemnity. With MSAs, a clear portion of the settlement is identified as medical cost, and the CMS procedures may also have increased the average size of the settlements due to future medical considerations. However, to date there are no publicly available studies to quantify the impact on overall costs or severity trends.

In addition, for some entities, a significant risk factor could be that some injured workers currently receiving Medicare payments should be classified as workers compensation claims. The Section 111 reporting could uncover Medicare payments that should shift to workers compensation claims, causing actuarial estimates to increase as CMS files liens to recover payments. Over the last three years *before* claim reporting was required, the number of recovery demands from CMS increased significantly to 74,000 in 2010 from 43,000 in 2007 [14]. The number may continue increasing after 2011, or it may spike and then settle down as CMS catches up. Note that recovery can affect claims that were open in prior years, even if they are closed now.

Successful recoveries naturally increase claim severity to an insurer. The General Accounting Office (GAO) estimates total saving due to Medicare claim denials and recovery of payments of $737 million in 2008, rising to $861 million in 2011. These are costs that are borne by insurers instead of Medicare. Furthermore the GAO notes that "(A)n accurate estimate of savings could take years to determine because of the time lag between initial notification of Medicare Secondary Payer situations and recovery, the fact that not all situations result in recoveries, and the fact that mandatory reporting is still being phased in." [15]

In 2012, new legislation affecting the interaction of Medicare and private property-casualty insurance was passed. A key provision of the Strengthening Medicare and Repaying Taxpayers Act, or SMART Act, was the implementation of a 3-year statute of limitations on Medicare conditional payment recovery. This provision became effective on July 10, 2013 and provides that an action by the federal government for recovery must be filed no later than 3 years after the date of the receipt of notice of a settlement, judgment, award, or other payment.

While the statute does not define how notice of the settlement, judgment, award or other payment is to be made to Medicare, the provision was put in place with the understanding that notice would be through Section 111 Mandatory Insurer Reporting. It is unclear then whether other types of "non-Section 111 Mandatory insurer Reporting" to Medicare will trigger the limitations period, or whether the statute of limitations will be effective in curtailing increased workers compensation claims should Medicare not cover certain claims.

## ***Changes in the Future?***

Section 111 reporting is in its infancy. It is uncertain how CMS will use the huge volume of data that it is collecting, whether this will lead to a significant further increase in set-asides or recovery demands, and whether the statute of limitations will temper claim volume. It may take years for changes to be fully apparent, especially for liability lines for which mandatory reporting didn't begin until 2012 and will be phased in.

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# Tort Reform Tension

Some countries, such as the U.S. and Australia, have made headway on reforming tort systems that many perceive to be unfair, costly and inefficient. Joint and several liability, compensatory damages, collateral sources and vicarious liability have specifically been targeted for change. Has the time come for amendments to Canada's legal rules?

August 1, 2005 **by Craig Harris**

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The wave of tort reform experiments that have washed over the legal systems of other

countries has barely caused a ripple in Canada. Despite the 2002 Attorney General Geoffrey Plant's civil liability review project in British Columbia, few provinces have gone fishing for serious changes to the way courts assess and rule damages. But insurers say the recent hard market revealed that reforms to key legal principles are necessary to reach the goals of stability and predictability.

"The primary reason behind the increase in claims (in the commercial liability market) is the cost of settling court cases and potential court cases, which has increased significantly over the past few years," according to the Insurance Bureau of Canada (IBC).

Australia enacted a sweeping series of changes to damage awards in 2003 and have addressed limits to liability but, currently no province is actively looking into tort reforms. Several groups, ranging from the IBC to the Risk and Insurance Management Society's Canada Council to the Voluntary Sector Forum to the Ontario Federation of Snowmobile Clubs, have targeted unreasonable liability lawsuits as a primary source of increasing claims costs and exposures.

"RIMS and Canadian risk managers have long supported meaningful tort reform to eliminate economic unpredictability and inefficiency," Lance Kayfish, chair of the RIMS Canada Council Sub-Committee on Communications and External Affairs and a risk manager for the City of Kelowna, B.C., says. "It has been on our radar screen for some time."

According to the IBC, court awards and legal expenses cost approximately $7.3 billion in 1998. By 2003, tort costs rose to an estimated $10 billion. These numbers pale in comparison to the sharp increase in tort costs experienced in the U.S. A Tillinghast study released in January shows that tort costs reached a record $246 billion in 2003. In Australia, court awards increased at a rate of 10% per year from 1992 to 2002, which contributed to an "insurance liability crisis in 2002," according to the Australian government treasury.

## ATTENTION TO THE AUSSIE WAY

In 2003, the Australian government undertook a "program of unprecedented law reform and achieved a raft of changes unmatched in the common law world for their breadth and scope," the treasury department noted in a report. Specifically, the changes involved three main areas – establishing liability, clarifying damages and undertaking procedural reforms. In particular, the amendments changed the way courts decide issues such as duty of care, foreseeability, causation and remoteness of damage and the standards to which professionals should be held.

The U.S. has been equally aggressive in its push for tort reform, spearheaded in many cases by the insurance industry. The Insurance Information Institute, AIG and the U.S. Chamber of Commerce released a paper early in 2005 entitled "Tort Excess: The Necessity for Reform from a Policy, Legal and Risk Management Perspective."

"The American legal system remains the most expensive civil justice system in the world, costing more than double that of other industrialized nations," the study argues. "Civil justice reform legislation aims to return integrity to the U.S. legal system, abolish incentives for abuse now endemic in the system and redirect the system on an efficient, timely, predictable and fair course."

Noting that the "future insurability of some types of liability risks is in doubt," the report cites several key reforms that either have taken or should be taking place across states, including capping non-economic damages, modifying the joint and several liability rule, restricting punitive damage awards and revising the collateral source rule.

## REFLECTING ON REFORM

An IBC document stated that "(tort reform) is an area garnering increased attention internationally, as reflected in the tort reforms that several US states have passed and the state legislative reforms to limit the escalation of liability costs in 2003." But the big question now is – what could tort reform look like in Canada and what are the chances of any changes being

enacted here?

The IBC has put some thoughts together on what it would like to see changed in specific areas of tort and general damages. Acknowledging differences between the U.S., Australian and Canadian environments, IBC vice president and general counsel Randy Bundus says there are some clear areas ripe for reform – joint and several liability, the collateral sources rule, establishing net income as the basis for determining damages and vicarious liability. “Our goal is to strike a balance in terms of fairness between the plaintiff and the defendant,” Bundus says.

Some legal groups agree with this approach. Jamie Chipman, a partner with Stewart McKelvey Stirling Scales and president of the Canadian Defence Lawyers Association, says there is a “need for clarity. It’s necessary to finally become proactive in tort reform because I am looking at what the Supreme Court of Canada has been doing of late with respect to any cases involving insurers and statutory language. The Supreme Court is saying if you don’t do anything with this antiquated language, we are going to continue to find a way to come out with decisions that are ‘plaintiff-friendly’.”

Not surprisingly, trial lawyers in Canada tend to disagree with the thrust of any tort reform measures. “The insurance industry likes to look at numbers, but as lawyers we are in the justice business,” Russ Howe, president of the Ontario Trial Lawyers Association and a partner with Boland Howe Barristers, says. “And the number one rule of law is that the innocent party gets full compensation. And that is what rules like joint and several liability are all about.”

## WHAT CURRENTLY COUNTS IN COURT

Under the current joint and several legal doctrine, courts allow the plaintiff to recover all of the damages from one of multiple wrongdoers, even if that party is only partially at-fault for the loss. It is one of the primary areas that IBC and other parties would like to see changed. “We don’t think it is fair for a defendant who is found to be only one per cent at fault to potentially have to pay 100% of the loss,” Bundus says.

“RIMS supports the elimination of joint and several liability for all non-economic damages, such as pain and suffering and punitive damages,” Kayfish says. “We believe this would discourage plaintiffs and their counsel from approaching defendants on the ‘deep pocket’ syndrome.”

Eric Gunnell, director of claims and litigation for the Ontario Municipal Insurance Exchange (OMEX), says joint and several liability is a “big issue for us. Because we represent municipalities, we are often the deep pocket they come to. And all they have to do is find that 1% (liability).”

The tendency towards “plaintiff-friendly” rulings makes some insurance groups reluctant to go to court. “We don’t like to go to trial, because there is no rhyme or reason to the settlement,” Gunnell says. “So we go to mediation and sit down and say if we don’t throw something in today, we could lose it all tomorrow.”

But Howe says trial lawyers must demonstrate that there is some liability for a party in the case of a loss. “To get them in the game, we have to prove they did something wrong,” he notes. “And realistically, lawyers don’t go to trial on cases where they think they are going to get one point on liability. That is way too risky.”

Howe also argues that joint and several liability has the salutary effect of increasing efficiency in the legal system. “It promotes settlement in many cases. If parties were only going to end up paying on some percentage basis, we would have way more trials. That would be very expensive and slow the whole system down.”

Jim Sami, general manager and attorney in fact for the Ontario School Board Insurance Exchange (OSBIE), says “trial lawyers play the (joint and several) card to the extreme, not only at the trial but also in negot
iations at mediation. They know if they have a deep pocket there they can use it to the maximum.”

Sami acknowledges that “there is a fairness issue in that maybe the guilty party does not have the ability or coverage to indemnify the injured party. Having said that, there are different ways to look at how joint and several could be changed. One way is to have a fund to pay for these kinds of lawsuits, similar to PACICC.”

Gunnell says if joint and several liability is not scrapped, it should at least be amended so that it is proportionate. “If you are going to keep it then let’s change it around, so that if you are in for 1%, just pay your 1%; not in for a penny and pay the pound,” he argues.

## THE BIGGER PICTURE

There are other areas beyond joint and several liability that insurers and other groups are interested in amending. Currently, damages for loss of income are determined on the basis of gross earnings, which do not take into account taxation and other employment deductions. In other words “plaintiffs can collect more than they would have received if they were working,” Bundus says. In addition, the collateral source rule means that plaintiffs have the potential for “double recovery” – once from the wrongdoer and secondly from insurance, sick pay and disability plans carried by employers or employees.

Gunnell argues that when it comes to loss of income “it is too easy to ramp up what this person could be worth. You start getting some astronomical numbers, and that ends up scaring you off going to trial, because your policy is going to be tagged. It is amazing what people could end up making when they ramp it all up.”

Howe counters that the government has granted the victim’s right to full compensation by not taxing future income. “This is a tax break that the government has decided to give to injured people and the insurance industry wants to steal it,” he says. “The question of taxes is between the individual and the state. The insurance industry is sticking its nose where it doesn’t belong.”

## VESTING VICARIOUSLY

In terms of vicarious liability, Gunnell says last years introduction of Bill C-45 into Ontario, which introduced criminal liability for employees and organizations for negligent conduct, has raised awareness of the issue. “‘We are starting to see it come out more now, ” he says. “Some of our members are saying `we have to look at our procedures, we don’t want to be held responsible for what one of our employees did,’ I think we are getting back to some of the reasons why auto went to no-fault in 1990, and that was to try to get it away from liability. Now, we seem to be falling right back into it.”

Vicarious liability is a broad, complex area of the law, Kayfish says, “but risk managers share the view that the standards and test for establishing vicarious liability are not high enough in many cases.”

The two main issues in vicarious liability today are sexual abuse claims and car leasing or renting (see Canadian Underwriter, March 2005 “The Politics of Leasing” and May 2005 “Staying on the Road.”). Howe says “vicarious liability is vital, you can’t dump it. For the leasing companies, it would be the biggest joke of all. Because it would mean the companies that are making money off this would be held to a lower standard than me if I lend my car to my brother.”

Other topics on IBC’s laundry list of legal reforms include disallowing gross-up for income tax and requiring that the courts order structured settlements in all cases where the plaintiff has future care or future income losses. Additional changes could see the elimination of prejudgment interest on general damages and the calculation of prejudgment interest on pecuniary losses from the date the claimant notifies the defendant they will be suing.

One area not mentioned in IBC documents, but still of concern to large insurance organizations is class action lawsuits, according to Sami. “These lawsuits are the one area that could create major havoc,” he says. “The cost of defence is a major concern and you can spend a lot of time and money in just fighting a certification case. I believe class action reform would be a valuable

area to consider."

Another issue that risk managers think should be reviewed is severe sanctions on frivolous lawsuits, according to Kayfish. "We think this will go a long way toward improving efficiency in the tort system." He notes that in provinces like Alberta, there are available remedies, such as the awarding of "double costs' against plaintiffs for frivolous lawsuits.

For Gunnell, the entire process of tort reform is long overdue here. " I think there is an appetite for tort reform in Canada," he says. "I used to think we were years behind the U.S. in terms of settlements. Now, I think we are right up there. We have to start moving from talking about it to doing something about it."

Howe argues that litigation in the U.S. is a "whole different world." The so-called reforms, like caps on non-economic damages, already exist in Canada. The same goes for punitive damages, which are minimal here compared to the U.S. The bottom line is that if the innocent victim doesn't get full compensation, we have just abandoned Magna Carta and hundreds of years of jurisprudence," he explains.

Bundus says the current tort reform proposals are just that – proposals – which could form part of an organized lobby to legislators. At this stage, however, it is not clear which group, or whether a coalition of groups, will lead the charge on tort reform. In Canada, the common law, including the law of negligence, falls within the jurisdiction of the provinces (Quebec operates on the civil code). That means lobbying for tort reform, if and when it comes, will need to be coordinated with various attorney generals.

"Tort reform will have to be done on a province by province basis," Bundus says. "Hopefully, there will be some receptive provinces and this will allow the industry to show that the experiment can work. This is an issue that affects all of society and requires some necessary changes."

Français

# Insurance Act

## R.R.O. 1990, REGULATION 664
## AUTOMOBILE INSURANCE

**Consolidation Period:** From July 1, 2020 to the e-Laws currency date.

Last amendment: 180/19.

Legislative History: 780/93, 823/93, 850/93, 553/94, 399/96, 464/96, 530/96, 301/98, 113/00, 483/01, 391/02, 275/03, 459/03, 210/04, 46/05, 316/05, 548/05, 62/08, 36/10, 291/10, 222/15, 250/15, 43/16, 252/16, 180/19.

***This is the English version of a bilingual regulation.***

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### DEFINITIONS

**1.** In this Regulation,

"commercial vehicle" means an automobile used primarily to transport materials, goods, tools or equipment in connection with the insured's occupation, and includes a police department vehicle, a fire department vehicle, a driver training vehicle, a vehicle designed specifically for construction or maintenance purposes, a vehicle rented for thirty days or less, or a trailer intended for use with a commercial; ("véhicule utilitaire")

"fleet" means a group of not fewer than five automobiles that meets the following requirements:

1. At least five of the automobiles in the group are commercial vehicles, public vehicles or vehicles used for business purposes.
2. The automobiles in the group are,
   i. under common ownership or management, and any automobiles in the group that are subject to a lease agreement for a period in excess of 30 days are leased to the same insured person, or
   ii. available for hire through a common online-enabled application or system for the pre-arrangement of transportation, and insured under a contract of automobile insurance in which the automobile owner or lessee, as the case may be, has coverage as an insured named in the contract; ("parc automobile")

"public vehicle" means an automobile used primarily to provide transportation services to the public, and includes an ambulance, bus, funeral vehicle, limousine or taxi. ("véhicule public") O. Reg. 780/93, s. 2; O. Reg. 275/03, s. 1; O. Reg. 43/16, s. 1; O. Reg. 252/16, s. 1.

**2.** REVOKED: O. Reg. 391/02, s. 1.

## MONTHLY PREMIUM PAYMENTS (SECTION 234 OF THE ACT)

**3.** (1) This section applies with respect to statutory condition 3 as set out in the Schedule to Ontario Regulation 777/93. O. Reg. 780/93, s. 3 (1).

(2) An insurer is not required to permit an insured to pay the premium in instalments unless all of the following conditions are met:

1. The insurer, together with its affiliates, insured at least 10,000 private passenger automobiles in Ontario during the previous year.
2. The contract is written on Ontario Automobile Policy 1 or Ontario Policy Form 2.
3. The contract does not insure a commercial vehicle or public vehicle.
4. The contract does not insure five or more vehicles that are under common ownership or management.
5. The total annual premium payable under the contract exceeds $300.
6. The insured has not had more than one automobile insurance policy terminated by an insurer for non-payment of the premium during the thirty-six months before the contract takes effect. O. Reg. 780/93, s. 3 (1); O. Reg. 464/96, s. 2.

(3) REVOKED: O. Reg. 780/93, s. 3 (1).

(4) As a precondition for permitting an insured to pay the premium in instalments, an insurer may require that the insured,

(a) make an initial payment equal to two monthly instalments of the premium; and

(b) agree to make all payments under the contract by pre-authorized payment from the insured's account at a financial institution. R.R.O. 1990, Reg. 664, s. 3 (4).

(5) REVOKED: O. Reg. 250/15, s. 1 (1).

(5.1) The maximum interest rate that an insurer may charge for instalment payments in respect of a contract entered into or renewed before June 1, 2016 is,

(a) 3 per cent of the total premium payable under the contract, if the term of the contract is twelve months or more;

(b) 1.5 per cent of the total premium payable under the contract, if the term of the contract is six months or more but less than twelve months; and

(c) 0.5 per cent of the total premium payable under the contract, if the term of the contract is less than six months. O. Reg. 780/93, s. 3 (3); O. Reg. 250/15, s. 1 (2).

(5.2) The maximum interest rate that an insurer may charge for instalment payments in respect of a contract entered into or renewed on or after June 1, 2016 is,

(a) 1.3 per cent of the total premium payable under the contract, if the term of the contract is twelve months or more;

(b) 0.65 per cent of the total premium payable under the contract, if the term of the contract is six months or more but less than twelve months; and

(c) 0.22 per cent of the total premium payable under the contract, if the term of the contract is less than six months. O. Reg. 250/15, s. 1 (3).

(6) The amount of each instalment payment shall be calculated as blended principal and interest.

(7) An insurer who is not required to permit its insureds to pay their premiums in instalments but who chooses to do so is subject to the same requirements as those insurers who are required to permit their insureds to pay their premiums in instalments. R.R.O. 1990, Reg. 664, s. 3 (6, 7).

## EXEMPTION FROM NOTICE (SECTION 236 OF THE ACT)

**4.** Insurers are exempt from the requirements of section 236 of the Act with respect to every contract of automobile insurance that insures a fleet. O. Reg. 275/03, s. 2.

## REFUSAL TO ISSUE CONTRACTS (SECTION 237 OF THE ACT)

**5.** (1) No insurer shall decline to issue, refuse to renew or terminate any contract of automobile insurance or refuse to provide or continue any coverage or endorsement solely because,

(a) the applicant or another person who would be an insured person under the contract is or was insured by the Facility Association; or

(b) another insurer declined to issue or renew another contract of automobile insurance for the applicant or another person who would be an insured person under the contract. R.R.O. 1990, Reg. 664, s. 5 (1).

(2) In deciding whether to issue, renew or terminate any contract of automobile insurance or to provide or continue any coverage or endorsement, the insurer shall not consider,

(a) the existence of a physical or mental disability affecting a person who would be an insured person under the contract;

(b) the number of persons who would become insured persons under the contract or their state of health or life expectancy;

(c) the occupation, profession or employment circumstances of any person who would be an insured person under the contract;

(d) the level of income of any person who would be an insured person under the contract;

(d.1) the employment history of a person who would be an insured person under the contract;

(d.2) the fact whether a person who would be an insured person under the contract has a credit card;

(d.3) the credit history of a person who would be an insured person under the contract;

(d.4) the credit rating of a person who would be an insured person under the contract;

(d.5) the fact whether a person who would be an insured person under the contract is bankrupt or has a history of bankruptcy;

(d.6) the residence history of a person who would be an insured person under the contract;

(d.7) the fact whether a person who would be an insured person under the contract owns a home;

(d.8) the gross or net worth of a person who would be an insured person under the contract;

(d.9) the indebtedness of a person who would be an insured person under the contract;

(d.10) the fact whether a person who would be an insured person under the contract has made premium payments that were late or dishonoured in respect of a contract of automobile insurance that was not terminated by reason of the late or dishonoured payments;

(e) the existence or non-existence of a medical, surgical, dental or hospitalization plan or any other arrangement or plan providing coverage to a person who would be an insured person under the contract for services and treatment that the insurer would otherwise be required to pay for under the *Statutory Accident Benefits Schedule*;

(f) the existence or non-existence of an income continuation benefit plan, a sick leave plan or any other arrangement or plan providing coverage to a person who would be an insured person under the contract for benefits that the insurer would otherwise be required to pay for under the *Statutory Accident Benefits Schedule*;

(g) a request by the applicant to purchase any optional benefit established under paragraph 10 of subsection 121 (1) of the Act;

(h) any past claim under Schedule C of the Act or under the *Statutory Accident Benefits Schedule* arising out of an incident for which a person who would be an insured person under the contract was not at fault; or

(i) any past claim under section 263 of the Act for loss or damage, arising directly or indirectly from the use or operation of an automobile, for which a person who would be an insured person under the contract was not at fault. R.R.O. 1990, Reg. 664, s. 5 (2); O. Reg. 780/93, ss. 1, 4; O. Reg. 46/05, s. 1.

(2.1) Subject to subsection (2.2), for the Personal Vehicles — Private Passenger Automobiles category of automobile insurance, in deciding whether to issue, renew or terminate any contract of automobile insurance or to provide or continue any coverage or endorsement, the insurer shall not consider a minor accident that occurred on or after June 1, 2016. O. Reg. 250/15, s. 2 (1).

(2.2) An insurer may consider a minor accident that occurred on or after June 1, 2016 if, within the previous three years, any automobiles that were or would be covered by the contract of automobile insurance were involved in a total of more than one minor accident and, in any of those accidents, the driver of that automobile was at fault. O. Reg. 250/15, s. 2 (1).

(2.3) For the purposes of subsections (2.1) and (2.2), an accident is a minor accident if all of the following circumstances exist:

1. The cost of damage to each automobile, including any associated property damage, did not exceed $2,000 and the cost of all such damages was paid by or on behalf of the driver who was at fault.
2. No personal injuries were sustained as a result of the accident.
3. No payment was made by any insurer with respect to damage to any automobile or property resulting from the accident. O. Reg. 250/15, s. 2 (1).

(3) In deciding whether to issue, renew or terminate a contract providing only third party liability coverage in any amount and the benefits and coverages described in subsection 265 (1) (uninsured automobile coverage) and section 268 (statutory accident benefits) of the Act, the insurer shall not consider whether a person who would be an insured person under the contract has made any past claim for loss or damage to an automobile, including its equipment, caused by any peril other than collision or upset. R.R.O. 1990, Reg. 664, s. 5 (3); O. Reg. 780/93, s. 1.

(4) An insurer shall not terminate a contract of automobile insurance because,

(a) a group marketing plan within the meaning of section 17 terminates; or

(b) the insured ceases to be a member of a group referred to in clause 16 (5) (a) or (b). O. Reg. 553/94, s. 1.

ADDED COVERAGE TO OFFSET TORT DEDUCTIBLES ENDORSEMENT

**5.1** (1) If requested by an insured in respect of a contract of automobile insurance, the insurer shall offer the "Added Coverage to Offset Tort Deductibles" endorsement, as approved by the Chief Executive Officer under section 227 of the Act. O. Reg. 36/10, s. 1; O. Reg. 180/19, s. 7.

(2) Benefits provided by the endorsement referred to in subsection (1) are deemed not to be statutory accident benefits for the purpose of Part VI of the Act. O. Reg. 36/10, s. 1.

DIRECT COMPENSATION — PROPERTY DAMAGE (CLAUSE 263 (5) (B) OF THE ACT)

**6.** (1) For the purpose of clause 263 (5) (b) of the Act, the insurer of an automobile that is in the care, custody or control of a person who is engaged in the business of selling, repairing, maintaining, servicing, storing or parking automobiles is entitled to indemnification from the person.

(2) The amount of the indemnity is limited to that proportion of the loss that is attributable to the fault, as determined under the fault determination rules, of the person or of an employee or agent of the person. R.R.O. 1990, Reg. 664, s. 6.

**7.** (1) For the purpose of clause 263 (5) (b) of the Act, the insurer of an automobile that is being towed by another automobile is entitled to indemnification from the lessee or, if there is no lessee, from the owner of the automobile towing it,

(a) if the lessee or owner, as the case may be, is engaged in the business of towing automobiles; or

(b) if the automobile towing the insured automobile has a gross vehicle weight greater than 4,500 kilograms.

(2) The amount of the indemnity is limited to that proportion of the loss that is attributable to the fault, as determined under the fault determination rules, of the driver of the automobile that is towing the insured automobile. R.R.O. 1990, Reg. 664, s. 7.

**8.** (1) For the purpose of clause 263 (5) (b) of the Act, the insurer of an automobile the contents of which suffer damage in an amount greater than $20,000 is entitled to indemnification from the insurer of the other automobile involved in the incident.

(2) The amount of the indemnity is limited to that proportion of the loss over $20,000 that is attributable to the fault, as determined under the fault determination rules, of the driver of the other automobile. R.R.O. 1990, Reg. 664, s. 8.

**8.1** The following classes of contracts are prescribed for the purpose of subsection 263 (5.1) of the Act:

1. Contracts written on Ontario Automobile Policy 1.

2. Contracts written on Ontario Policy Form 4. O. Reg. 399/96, s. 1.

INDEMNIFICATION FOR STATUTORY ACCIDENT BENEFITS (SECTION 275 OF THE ACT)

**9.** (1) In this section,

"first party insurer" means the insurer responsible under subsection 268 (2) of the Act for the payment of statutory accident benefits; ("assureur de première part")

"heavy commercial vehicle" means a commercial vehicle with a gross vehicle weight greater than 4,500 kilograms; ("véhicule utilitaire lourd")

"motorcycle" means a self-propelled vehicle with a seat or saddle for the use of the driver, steered by handlebars and designed to travel on not more than three wheels in contact with the ground, and includes a motor scooter and a motor assisted bicycle as defined in the *Highway Traffic Act*; ("motocyclette")

"motorized snow vehicle" means a motorized snow vehicle as defined in the *Motorized Snow Vehicles Act*; ("motoneige")

"off-road vehicle" means an off-road vehicle as defined in the *Off-Road Vehicles Act*; ("véhicule tout terrain")

"second party insurer" means an insurer required under section 275 of the Act to indemnify the first party insurer. ("assureur de deuxième part") R.R.O. 1990, Reg. 664, s. 9 (1); O. Reg. 780/93, ss. 1, 6.

(2) A second party insurer under a policy insuring any class of automobile other than motorcycles, off-road vehicles and motorized snow vehicles is obligated under section 275 of the Act to indemnify a first party insurer,

(a) if the person receiving statutory accident benefits from the first party insurer is claiming them under a policy insuring a motorcycle and,

(i) if the motorcycle was involved in the incident out of which the responsibility to pay statutory accident benefits arises, or

(ii) if motorcycles and motorized snow vehicles are the only types of vehicle insured under the policy; or

(b) if the person receiving statutory accident benefits from the first party insurer is claiming them under a policy insuring a motorized snow vehicle and,

(i) if the motorized snow vehicle was involved in the incident out of which the responsibility to pay statutory accident benefits arises, or

(ii) if motorcycles and motorized snow vehicles are the only types of vehicle insured under the policy. R.R.O. 1990, Reg. 664, s. 9 (2); O. Reg. 780/93, s. 1.

(3) A second party insurer under a policy insuring a heavy commercial vehicle is obligated under section 275 of the Act to indemnify a first party insurer unless the person receiving statutory accident benefits from the first party insurer is claiming them under a policy insuring a heavy commercial vehicle. R.R.O. 1990, Reg. 664, s. 9 (3); O. Reg. 780/93, s. 1.

SETTLEMENTS — STATUTORY ACCIDENT BENEFITS

**9.1** (1) In this section,

"settlement" means an agreement between an insurer and an insured person that finally disposes of a claim or dispute in respect of the insured person's entitlement to one or more benefits under the *Statutory Accident Benefits Schedule*. O. Reg. 780/93, s. 7.

(2) The insurer shall give the insured person a written disclosure notice, signed by the insurer, with respect to the settlement. O. Reg. 483/01, s. 1.

(3) The disclosure notice shall be in a form approved by the Chief Executive Officer and shall contain the following information:

1. The insurer's offer with respect to the settlement.
2. A description of the benefits that may be available to the insured person under the *Statutory Accident Benefits Schedule*.
3. A statement that the insured person may, within two business days after the later of the day the insured person signs the disclosure notice and the day the insured person signs the release, rescind the settlement by delivering a written notice to the office of the insurer or its representative and returning any money received by the insured person as consideration for the settlement.
4. A description of the consequences of the settlement on the benefits described under paragraph 2 including,
   i. a statement of the restrictions contained in the settlement on the insured person's right to apply to the Licence Appeal Tribunal under subsection 280 (2) of the Act or appeal from a decision of the Licence Appeal Tribunal,
   ii. a statement that the tax implications of the settlement may be different from the tax implications of the benefits described under paragraph 2 and.
   iii. a statement that the insured person may not apply to the Licence Appeal Tribunal under subsection 280 (2) of the Act with respect to benefits that were the subject of a settlement or a purported settlement unless the insured person has returned the money received as consideration for the settlement.
5. A statement advising the insured person to consider seeking independent legal, financial and medical advice before entering into the settlement.
6. A statement for signature by the insured person acknowledging that he or she has read the disclosure notice and considered seeking independent legal, financial and medical advice before entering into the settlement. O. Reg. 483/01, s. 1; O. Reg. 43/16, s. 2 (1, 2); O. Reg. 180/19, s. 7.

(4) The insured person may rescind the settlement within two business days after the later of the day the insured person signs the disclosure notice and the day the insured person signs the release. O. Reg. 483/01, s. 1.

(5) The insured person may rescind the settlement after the period referred to in subsection (4) if the insurer has not complied with subsections (2) and (3). O. Reg. 483/01, s. 1.

(6) Subsections (4) and (5) do not apply with respect to a settlement that has been approved by a court under Rule 7 of the Rules of Civil Procedure (Parties under Disability). O. Reg. 483/01, s. 1.

(7) The insured person shall rescind a settlement under subsection (4) or (5) by delivering a written notice to the office of the insurer or its representative and returning any money received by the insured person as consideration for the settlement. O. Reg. 483/01, s. 1.

(8) No person may apply to the Licence Appeal Tribunal under subsection 280 (2) of the Act with respect to benefits that were the subject of a settlement or a purported settlement unless the person has returned the money received as consideration for the settlement. O. Reg. 483/01, s. 1; O. Reg. 43/16, s. 2 (3).

(9) If the insured person returns money to the insurer under subsection (7) or (8) and a dispute arises between the insurer and the insured person with respect to the validity of the purported settlement or the right of the insured person to rescind the

settlement, the insurer shall hold the money in trust until the matter is determined, at which time the amount and any income on the amount,

(a) shall be paid to the insured, if it is determined or agreed that there was a valid settlement that was not rescinded; and

(b) shall be returned to the insurer, if it is determined or agreed that there was no settlement, or that the settlement was invalid or was rescinded. O. Reg. 483/01, s. 1.

(10) A restriction in a settlement on an insured person's right to apply to the Licence Appeal Tribunal under subsection 280 (2) of the Act or appeal from a decision of the Licence Appeal Tribunal is void unless the insurer complied with subsections (2) and (3) and one of the following conditions is satisfied:

1. The settlement is entered into on or after the first anniversary of the day of the accident that gave rise to the claim.
2. Before entering into the settlement,
   i. the insured applied to the Licence Appeal Tribunal under subsection 280 (2) of the Act, and
   ii. if there were applicable rules or procedures of the Licence Appeal Tribunal in respect of case conferences at the time of the settlement, a case conference was held in accordance with the rules or procedures. O. Reg. 43/16, s. 2 (4).

(11), (12) REVOKED : O. Reg. 43/16, s. 2 (5).

**9.2** (1) Section 9.1 applies only with respect to settlements made on or after the transition date. O. Reg. 43/16, s. 3.

(2) Subsection 9.1 (3), as it read immediately before the transition date, applies with respect to settlements for which written notice under subsection 9.1 (2) was given before the transition date but which were made on or after the transition date. O. Reg. 43/16, s. 3.

(3) Section 9.1, as it read immediately before the transition date, applies with respect to settlements made before the transition date, with necessary modifications, and the following modifications:

1. Subsections 9.1 (2) to (5), as they read on February 28, 2002, continue to apply with respect to settlements for which written notice under subsection 9.1 (2) was given before March 1, 2002.
2. In addition to a mediation proceeding, subsection 9.1 (8) applies in respect of an application to the Licence Appeal Tribunal under subsection 280 (2) of the Act.
3. In addition to the right to mediate, litigate, appeal or apply to vary an order, subsection 9.1 (10) applies to the right to apply to the Licence Appeal Tribunal under subsection 280 (2) of the Act or appeal from a decision of the Licence Appeal Tribunal. O. Reg. 43/16, s. 3.

(4) In this section,

"transition date" has the same meaning as in subsection 283 (5) of the Act. O. Reg. 43/16, s. 3.

DISPUTE RESOLUTION (SECTION 280 OF THE ACT)

**10.** If the Licence Appeal Tribunal finds that an insurer has unreasonably withheld or delayed payments, the Licence Appeal Tribunal, in addition to awarding the benefits and interest to which an insured person is entitled under the Statutory Accident Benefits Schedule, may award a lump sum of up to 50 per cent of the amount to which the person was entitled at the time of the award together with interest on all amounts then owing to the insured (including unpaid interest) at the rate of 2 per cent per month, compounded monthly, from the time the benefits first became payable under the Schedule. O. Reg. 43/16, s. 4.

**11.** REVOKED: O. Reg. 301/98, s. 2.

**12., 13.** REVOKED : O. Reg. 43/16, s. 4.

**14.** REVOKED: O. Reg. 301/98, s. 2.

PRESCRIBED ELEMENTS OF RISK CLASSIFICATION SYSTEM (SECTIONS 410 TO 417 OF THE ACT)

**14.1** (1) For the purposes of section 260 of the Act, insurers shall use the following elements of a risk classification system in classifying risks for loss or damage to an automobile or loss of its use:

1. REVOKED: O. Reg. 250/15, s. 3 (1).
2. For collision or upset coverage, as referred to in the standard policy forms approved by the Chief Executive Officer under subsection 227 (5) of the Act, a deductible of $500 for contracts issued or renewed on or after April 15, 2004, unless the contract provides for a different amount.
3. For comprehensive coverage, as referred to in the standard policy forms approved by the Chief Executive Officer under subsection 227 (5) of the Act,
   i. a deductible of $300 for contracts issued or renewed on or after April 15, 2004 and before June 1, 2016, unless the contract provides for a different amount, and

ii. a deductible of $500 for contracts issued or renewed on or after June 1, 2016, unless the contract provides for a different amount. O. Reg. 459/03, s. 1; O. Reg. 250/15, s. 3; O. Reg. 180/19, s. 7.

(2) Insurers shall use the following elements in their risk classification systems in classifying risks for damage to an automobile or its contents or loss of its use:

1. For contracts issued or renewed on or after April 15, 2004 and before September 1, 2010, $300 as the amount of the reduction referred to in clause 263 (5.1) (b) of the Act, unless the contract provides for a different amount.
2. For contracts issued or renewed on or after September 1, 2010, $500 as the amount of the reduction referred to in clause 263 (5.1) (b) of the Act, unless the contract provides for a different amount. O. Reg. 36/10, s. 3.

(3) Insurers shall use the following element in their risk classification systems in classifying risks for the Personal Vehicles — Private Passenger Automobiles category of automobile insurance:

1. For contracts issued or renewed on or after January 1, 2016, a discount in the rate of insurance in respect of an automobile that is equipped with winter tires. O. Reg. 222/15, s. 1.

### APPLICATION OF SECTIONS 410 TO 417 OF THE ACT

**15.** (1) Sections 410 to 417 of the Act apply in respect of contracts of automobile insurance written on Ontario Automobile Policy 1 or Ontario Policy Form 2. O. Reg. 464/96, s. 5 (2).

(2) Sections 410 to 417 of the Act apply in respect of all types of endorsements to contracts of automobile insurance written on Ontario Automobile Policy 1 or Ontario Policy Form 2. O. Reg. 464/96, s. 5 (2).

(3) Despite subsections (1) and (2), sections 410 to 417 of the Act do not apply to any contract of automobile insurance that insures a fleet. O. Reg. 275/03, s. 6.

### EXPEDITED RISK CLASSIFICATION AND RATE APPROVAL (SECTION 411 OF THE ACT)

**15.1** (1) The percentage prescribed for the purpose of paragraph 1 of subsection 411 (1) of the Act is, for each coverage and category of automobile insurance, the percentage difference between the average of the insurer's existing rates for that coverage and category and the average of the insurer's proposed rates. O. Reg. 464/96, s. 6.

(2) For the purpose of paragraph 1 of subsection 411 (1) of the Act, the proposed rates must meet the following additional criteria:

1. The proposed rates relate only to the Personal Vehicles — Private Passenger Automobiles category of automobile insurance.
2. The effective date of the proposed rates for the insurer's renewal business is on or after January 1, 1997.
3. The average cumulative rate change for all coverages, calculated in accordance with the Section 411/412 Filing Guidelines published by the Financial Services Commission of Ontario, as they may be amended from time to time, is less than or equal to zero.
4. The percentage difference, for each territory used by the insurer, between the average of the existing rates for each coverage and the average of the proposed rates for that coverage is not more than 5 per cent higher or lower than the percentage difference, for all of Ontario, between the average of the existing rates for that coverage and the average of the proposed rates for that coverage.
5. No changes are proposed to the rating algorithm, differentials, discounts or surcharges used to determine the proposed rates. O. Reg. 464/96, s. 6; O. Reg. 301/98, s. 1; O. Reg. 222/15, s. 2.

(3) For the purpose of paragraph 2 of subsection 411 (1) of the Act, the proposed risk classification system may not contain,

(a) any new element; or

(b) any existing element that uses a different definition or different rating rules. O. Reg. 464/96, s. 6.

### PROHIBITED RISK CLASSIFICATION ELEMENTS (SECTIONS 410 TO 417 OF THE ACT)

**16.** (1) Insurers are prohibited from using elements of a risk classification system described in this section in classifying risks for any coverage or category of automobile insurance. O. Reg. 780/93, s. 8 (1).

(2) No element of a risk classification system shall use past claims arising out of accidents occurring on or after September 1, 2010 for which an insured person was 25 per cent or less at fault. O. Reg. 36/10, s. 4.

(3) No element of a risk classification system shall use the existence or non-existence of a medical, surgical, dental or hospitalization plan or any other arrangement or plan providing coverage to a person who would be an insured person under the contract for services and treatment that the insurer would otherwise be required to pay for under the *Statutory Accident Benefits Schedule.* R.R.O. 1990, Reg. 664, s. 16 (3); O. Reg. 780/93, ss. 1, 8 (3).

(4) No element of a risk classification system shall use the existence or non-existence of an income continuation plan, a sick leave plan or any other arrangement or plan providing coverage to a person who would be an insured person under the

contract for benefits that the insurer would otherwise be required to pay for under the *Statutory Accident Benefits Schedule.* R.R.O. 1990, Reg. 664, s. 16 (4); O. Reg. 780/93, ss. 1, 8 (4).

(4.1) No element of a risk classification system shall use a lapse in automobile insurance coverage unless,

(a) the insured person contravened section 2 of the *Compulsory Automobile Insurance Act* during the lapse in coverage; or

(b) the lapse of coverage resulted directly or indirectly from,

(i) the termination of a policy of automobile insurance as a result of the insured person's failure to pay the premiums due under the policy,

(ii) the suspension of the insured person's driver's licence as a result of a conviction for an offence related to the use or operation of an automobile, or

(iii) an accident or a conviction for an offence related to the use or operation of an automobile, if the insured person did not inform the insurer of the accident or conviction and the accident or conviction would likely have led to the insured person being charged a higher premium. O. Reg. 464/96, s. 7 (2).

(4.2) Except as permitted under subsection (4.3) or (5), no element of a risk classification system shall use any of the following factors:

1. The level of income of a person who would be an insured person under the contract.
2. The employment history of a person who would be an insured person under the contract.
3. The occupation, profession or employment circumstances of a person who would be an insured person under the contract, unless the contract is in respect of a commercial vehicle or a public vehicle or a vehicle used in the course of carrying on a business, trade or profession.
4. The fact whether a person who would be an insured person under the contract has a credit card.
5. The credit history of a person who would be an insured person under the contract.
6. The credit rating of a person who would be an insured person under the contract.
7. The fact whether a person who would be an insured person under the contract is bankrupt or has a history of bankruptcy.
8. The residence history of a person who would be an insured person under the contract.
9. The fact whether a person who would be an insured person under the contract owns a home.
10. The gross or net worth of a person who would be an insured person under the contract.
11. The indebtedness of a person who would be an insured person under the contract.
12. The fact whether a person who would be an insured person under the contract has made premium payments that were late or dishonoured in respect of a contract of automobile insurance that was not terminated by reason of the late or dishonoured payments.
13. A minor accident that occurred on or after June 1, 2016. O. Reg. 46/05, s. 2; O. Reg. 250/15, s. 4 (1, 2).

(4.3) The factor described in paragraph 13 of subsection (4.2) may be used in an element of a risk classification system if, within the previous three years, any automobiles that were or would be covered by the contract of automobile insurance were involved in a total of more than one minor accident and, in any of those accidents, the driver of that automobile was at fault. O. Reg. 250/15, s. 4 (3).

(4.4) For the purposes of subsections (4.2) and (4.3), an accident is a minor accident if all of the following circumstances exist:

1. The cost of damage to each automobile, including any associated property damage, did not exceed $2,000 and the cost of all such damages was paid by or on behalf of the driver who was at fault.
2. No personal injuries were sustained as a result of the accident.
3. No payment was made by any insurer with respect to damage to any automobile or property resulting from the accident. O. Reg. 250/15, s. 4 (3).

(5) Membership in an organized group shall not be used as an element of a risk classification system unless the group consists of no fewer than 100 members other than associate members of the group, a group marketing plan has been entered into that meets the requirements of section 17 and the group is,

(a) a trade union, a professional or occupational association or an alumni association;

(b) a non-profit entity that has been in existence for at least 24 months;

(c) a group of employees of the same employer; or

(d) a group of members of a credit union that satisfies the requirements of subsection (7). O. Reg. 275/03, s. 7.

(6) An organization formed primarily for the purpose of purchasing or providing goods or services does not constitute a non-profit entity for the purposes of clause (5) (b). O. Reg. 275/03, s. 7.

(7) A group of members of a credit union constitute an organized group for the purposes of clause (5) (d) if the following rules are satisfied:

1. The bond of association in respect of the credit union for the purposes of subsection 30 (1) of the *Credit Unions and Caisses Populaires Act, 1994* is a common bond of occupation or association referred to in clause 30 (2) (a) of that Act.
2. The members of the credit union who belong to the group are,
   i. employees of the same employer,
   ii. members of the same trade union, or
   iii. members of the same professional or occupational association.
3. The group of members does not include any person admitted to the credit union who does not come within the common bond of association described in paragraph 1, unless the person is an associate member of the group under subsection (8), (9) or (10). O. Reg. 275/03, s. 7.

(8) Despite paragraph 2 of subsection (7), the following persons may be included in an organized group described in clause (5) (d) in respect of a particular credit union, but only as associate members of the group:

1. Employees of the credit union.
2. Retired employees of the credit union who receive or are entitled to receive retirement benefits from the credit union. O. Reg. 275/03, s. 7.

(9) Retired employees of the same employer who receive or are entitled to receive retirement benefits from the employer may be included in a group referred to in clause (5) (c) or subparagraph 2 i of subsection (7), but only as associate members of the group. O. Reg. 275/03, s. 7.

(10) Each of the following persons may be included in a group referred to in clause (5) (a), (b), (c) or (d), but only as an associate member of the group:

1. The spouse of a member or associate member of the group.
2. A person under 25 years of age who is a child of a member or associate member of the group or of the spouse of a member or associate member of the group and,
   i. resides in the same dwelling as the member or associate member, or the spouse of the member or associate member, as the case may be, or
   ii. attends an educational institution on a full-time basis.
3. The spouse of a child described in paragraph 2. O. Reg. 275/03, s. 7; O. Reg. 316/05, s. 1 (1-4).

(11) A risk classification system shall not include an element that results in the exclusion of a member or associate member of an organized group referred to in subsection (5) for the purposes of risk classification if,

(a) the insurance is sold under a group marketing plan within the meaning of section 17; and

(b) coverage is for a private passenger vehicle within the meaning of the Plan of Operation established by the Facility Association under subsection 7 (3) of the *Compulsory Automobile Insurance Act*. O. Reg. 275/03, s. 7.

(12) No element of a risk classification system shall result in a change in the classification of an insured before the next renewal date of the insured's policy because,

(a) a group marketing plan within the meaning of section 17 terminates; or

(b) the insured ceases to be a member or associate member of an organized group referred to in subsection (5). O. Reg. 275/03, s. 7.

(13) Subject to subsection (12), no element of a risk classification system that uses membership in an organized group referred to in subsection (5) shall apply to an insured who ceases to be a member or associate member of the group. O. Reg. 275/03, s. 7.

(14) An organized group that met the requirements of this section and section 17 as they read on September 30, 2003 shall be deemed to meet the requirements of this section and section 17 after that day if,

(a) membership in the group was an element of a risk classification system before October 1, 2003; and

(b) a group marketing plan has been entered into that meets the requirements of section 17. O. Reg. 275/03, s. 7.

(15) In this section,

"credit union" means a credit union as defined in section 1 of the *Credit Unions and Caisses Populaires Act, 1994*; ("caisse populaire")

"spouse" has the same meaning as in Part VI of the Act. ("conjoint") O. Reg. 275/03, s. 7; O. Reg. 316/05, s. 1 (5).

GROUP MARKETING PLANS

**17.** (1) In this section,

"group marketing plan" means an arrangement made in writing between an insurer and a sponsor to market automobile insurance to members of an organized group referred to in subsection 16 (5); ("plan de commercialisation de groupe")

"sponsor" means a person who is authorized to enter into a group marketing plan on behalf of an organized group referred to in subsection 16 (5). ("parrain") O. Reg. 275/03, s. 8 (1).

(1.1) A group marketing plan shall include the details of the arrangement, including,

(a) the name of the insurer and the name of the sponsor or sponsors and their respective responsibilities;

(b) the name of the broker or agent;

(c) the effective date of the group marketing plan;

(d) information with respect to fees;

(e) whether or not the group marketing plan is made to the exclusion of another group marketing plan with respect to the group; and

(f) the procedure for terminating the group marketing plan. O. Reg. 275/03, s. 8 (1).

(2) An insurer shall not sell automobile insurance under a group marketing plan if any person is required to purchase insurance under the plan or is subject to a penalty for failing to purchase insurance under the plan. O. Reg. 553/94, s. 3.

(3) An insurer, agent or broker who sells automobile insurance under a group marketing plan shall not accept an application from a person for insurance coverage unless, not later than 30 days after accepting the application, the insurer, agent or broker makes full and fair disclosure in writing to the person of all features of the group marketing plan and the insurance coverage, including,

(a) the group marketing plan's provisions relating to group discounts, policyholder services, termination of the plan and termination of eligibility; and

(b) the financial interests of the sponsor in the group marketing plan. O. Reg. 553/94, s. 3; O. Reg. 275/03, s. 8 (2, 3).

(3.1) For the purposes of clause (3) (b), the financial interests of the sponsor include any lump sum payment, percentage of premium or other payment received by the sponsor from the insurer as a result of a person purchasing automobile insurance coverage through the plan. O. Reg. 275/03, s. 8 (4).

(4) A person who collects premiums under a group marketing plan, other than an agent or broker, shall provide adequate administrative facilities for the collection of premiums and shall be deemed to be the agent of the insurer for the purpose of collecting premiums. O. Reg. 553/94, s. 3.

(5) All premium funds received or receivable by a person under a group marketing plan, other than by an agent or broker, shall be deemed to be trust funds held for the benefit of the insurer. O. Reg. 553/94, s. 3.

(6) A person who receives or is entitled to receive premium funds under a group marketing plan shall not assign, pledge, mortgage or in any way charge the funds. O. Reg. 553/94, s. 3.

(7) An assignment, pledge, mortgage or other charge of premium funds contrary to subsection (6) is void. O. Reg. 553/94, s. 3.

PUBLIC ADJUSTERS — STATUTORY ACCIDENT BENEFITS (SECTION 398 OF THE ACT)

**18.** A person who is authorized to provide legal services in Ontario pursuant to the *Law Society Act* is exempt from subsection 398 (1) of the *Insurance Act* in respect of a claim for benefits under the Statutory Accident Benefits Schedule. O. Reg. 62/08, s. 1.

TRANSITION

**19.** In this section and in sections 20 and 21,

"arbitrator" means an arbitrator appointed under section 8 of the pre-transition date Act; ("arbitre")

"Director" means the director of arbitrations appointed under subsection 6 (1) of the pre-transition date Act; ("directeur")

"Licence Appeal Tribunal" means the Licence Appeal Tribunal established under the *Licence Appeal Tribunal Act, 1999*; ("Tribunal d'appel en matière de permis")

"pre-transition date Act" means the Act as it read immediately before the transition date; ("loi antérieure à la date de transition")

"transition date" has the same meaning as in subsection 283 (5) of the Act. ("date de transition") O. Reg. 180/19, s. 1.

**20.** (1) On July 1, 2020, any of the following proceedings that were continued by subsection 21 (1) or section 22.1 of this Regulation, as either provision read immediately before July 1, 2020, and that have not been finally determined by July 1, 2020 are extinguished:

1. A mediation under section 280 of the pre-transition date Act.
2. An arbitration under section 282 of the pre-transition date Act.
3. An appeal under section 283 of the pre-transition date Act.
4. An application for a variation or revocation of an order under subsection 284 of the pre-transition date Act. O. Reg. 180/19, s. 1.

(2) For greater certainty, no party may commence a new proceeding described in subsection (1). O. Reg. 180/19, s. 1.

(3) Despite subsection (1), if a motion or application to a judge for approval of a settlement in respect of a person under disability has been made in accordance with the Rules of Civil Procedure on or before July 1, 2020 in respect of a proceeding described in paragraph 2, 3 or 4 of subsection (1), the proceeding is continued until the settlement is approved or not approved by the judge. O. Reg. 180/19, s. 1.

(4) A proceeding described in subsection (3) is extinguished on the day the settlement is not approved by a judge, and,

(a) in the case of a proceeding described in paragraph 2 of subsection (1), either party may make a new application to the Licence Appeal Tribunal within 90 days after the day the judge refused to approve the settlement to resolve the dispute in accordance with section 280 of the Act; or

(b) in the case of a proceeding described in paragraph 3 of subsection (1), the former appellant may make an appeal of the arbitration order to the Divisional Court in accordance with section 11 of the *Licence Appeal Tribunal Act, 1999*, within 30 days after the day the judge refused to approve the settlement, as if,

(i) it were an appeal of a decision of the Licence Appeal Tribunal, and

(ii) the arbitration order were made on the day the judge refused to approve the settlement. O. Reg. 180/19, s. 1.

(5) If, on July 1, 2020, an order has not yet been issued in an arbitration described in paragraph 2 of subsection (1), either party may make a new application to the Licence Appeal Tribunal on or before December 1, 2020 to resolve the dispute in accordance with section 280 of the Act. O. Reg. 180/19, s. 1.

(6) If, on July 1, 2020, an order has previously been issued in an arbitration described in paragraph 2 of subsection (1) but the issue of a special award under subsection 282 (10) of the pre-transition date Act or of costs has not been finally determined, either party may apply to the Licence Appeal Tribunal under section 280 of the Act on or before December 1, 2020 to decide that outstanding issue. O. Reg. 180/19, s. 1.

(7) Section 56 of Ontario Regulation 34/10 (Statutory Accident Benefits Schedule - Effective September 1, 2010), made under the Act, does not apply to an application described in clause (4) (a) or subsection (5) or (6). O. Reg. 180/19, s. 1.

(8) If an order has been issued in an arbitration described in paragraph 2 of subsection (1) before July 1, 2020, the order has not been appealed and the time to serve a notice of motion for leave to appeal, as set out in subsection 283 (2) of the pre-transition date Act, has not expired, either party may appeal the arbitration order to the Divisional Court in accordance with section 11 of the *Licence Appeal Tribunal Act, 1999* as if it were an appeal of a decision of the Licence Appeal Tribunal. O. Reg. 180/19, s. 1.

(9) If an appeal of an arbitration order has been extinguished by subsection (1), the former appellant may make an appeal of the arbitration order to the Divisional Court, in accordance with section 11 of the *Licence Appeal Tribunal Act, 1999*, before December 1, 2020 as if,

(a) it were an appeal of a decision of the Licence Appeal Tribunal; and

(b) the arbitration order were made on July 1, 2020. O. Reg. 180/19, s. 1.

**21.** (1) A court that conducts a judicial review of a proceeding described in subsection 20 (1) may refer the proceeding to the Licence Appeal Tribunal if it determines that such a referral is appropriate. O. Reg. 180/19, s. 2 (2).

(2) If the Director ordered that a dispute be heard again by an arbitrator, and if the dispute was not finally determined by July 1, 2020, either party may make a new application to the Licence Appeal Tribunal on or before December 1, 2020 to resolve the dispute in accordance with section 280 of the Act. O. Reg. 180/19, s. 2 (2).

(3) If a court refers a dispute to be decided by the Director or by an arbitrator on or after July 1, 2020, either party may make a new application to the Licence Appeal Tribunal within 90 days after the day the matter was referred to the Director or arbitrator to resolve the dispute in accordance with section 280 of the Act. O. Reg. 180/19, s. 2 (2).

(4) Section 56 of Ontario Regulation 34/10 (Statutory Accident Benefits Schedule - Effective September 1, 2010), made under the Act, does not apply to an application described in subsection (2) or (3). O. Reg. 180/19, s. 2 (2).

**22.** (1) For greater certainty, nothing in section 20 or 21 prevents a party from seeking judicial review. O. Reg. 180/19, s. 3 (2).

(2) For greater certainty, if an application is made to the Licence Appeal Tribunal under subsection 280 (2) of the Act, the dispute shall be resolved in accordance with the rules of the Licence Appeal Tribunal. O. Reg. 180/19, s. 3 (2).

**22.1-25.** REVOKED : O. Reg. 180/19, s. 5.

**26.** References in this Regulation to a form approved by the Chief Executive Officer are deemed to include the last form approved by the Superintendent for the purposes of the relevant provision prior to the day section 22 of Schedule 13 to the *Plan for Care and Opportunity Act (Budget Measures), 2018* came into force until the Chief Executive Officer approves a subsequent form for the purposes of the relevant provision. O. Reg. 180/19, s. 6.

TABLE 1 REVOKED: O. Reg. 36/10, s. 5.

SCHEDULE REVOKED: O. Reg. 43/16, s 6.

FORM 1 REVOKED: O. Reg. 780/93, s. 9.

Français

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# CODE OF CONDUCT FOR INSURERS' USE OF CREDIT INFORMATION (CODE)

## PURPOSE

The purpose of this Code of Conduct is to provide insurers who use credit information in their underwriting and rating activities for personal insurance with guidelines on the use of credit information in accordance with principles of consumer protection and applicable federal and provincial laws.

## SCOPE

This Code applies to personal insurance only and does not apply to commercial insurance. In this context, "personal insurance" means private passenger automobile, homeowners, motorcycle, mobile-homeowners and non-commercial dwelling fire insurance policies [including boat, personal watercraft, snowmobile and recreational vehicle polices]. Such policies are individually underwritten for personal, family or household use. "Credit information", is defined in this Code to include credit scores, credit history, credit reports and other credit related information as defined under the provincial Consumer Reporting Acts.

**These guidelines are for the use of credit information obtained from a consumer reporting agency in the context of quoting, underwriting and rating.**

## 1. Comply with provincial laws

The insurer must be aware of and fully comply with any federal and provincial laws and regulations (including but not limited to Privacy Legislation and Consumer Reporting Acts) affecting their use and/or management of credit information.

## 2. Ensure credit information used is current and accurate

### a) The insurer must use up to date credit information:

- The insurer shall not use credit information that is not current;
- The insurer shall update any customer credit information used, at the customer's request.

### b) Ensure accurate credit information is used:

- When informed by a consumer reporting agency of a correction, supplement or deletion to an individual's credit file, the insurer must immediately make the necessary adjustments to the file and shall re-underwrite and re-rate the consumer as soon as practical;
- After re-underwriting or re-rating the insured, the insurer shall make any further adjustments that are consistent with its underwriting and rating practices;
- If an insurer determines that the insured has overpaid premium it shall comply with pertinent regulations relating to refunding of overpayments;
- At the request of the consumer, the insurer shall inform the consumer of the source/supplier of the credit information used (i.e. identifying the specific consumer reporting agency that supplied the credit information);
- The customer/applicant for insurance is responsible for contacting the consumer reporting agency to verify his/her file and, if applicable, request that it be corrected.

## 3. Gathering prior consent to collect and use credit information (written or verbal)

The insurer must secure prior consent to collect and use credit information from the consumer in accordance with the following principles and procedures:

### a) Consent must be informed.

The following are characteristics of informed consent:

- Customers must not feel obliged to give consent;
- Customers must understand the nature and scope of the request. The request for consent must be clear and understandable to ensure that customers know specifically what they are consenting to and how that consent will be used;
- Consent must be specific and the insurer must not presume consent will be given. Consent may be given verbally, in writing or via an e-medium. E-medium consent should be a field that the policyholder can click on directly in order to give consent.

Prior to an agent or broker collecting credit information, the customer consent field (agent's or broker's screen) must be clear and explicit for the user. The field must not default to yes.

**b) No one can give consent for another person.** Consent must be obtained directly from each individual in the household if their credit information is to be used. Any applicant or co-applicant about whom credit information will be collected and used must either provide a signed consent form or provide verbal consent directly to the agent or broker.

c) **Consent retention:** The insurer must maintain the trail or proof of consent in the customer file (paper, e-medium or other). The retention period for the customer file is the minimum period required by law.

d) **Duration of consent:** The consent is valid for the duration that the policy is in effect. Unless withdrawn by the policyholder, consent is valid for as long as the policyholder has a continuous business relationship with the insurer, i.e., the policy is in force until cancelled. Under these circumstances, the insurer can request the insured's credit record or credit information from the consumer reporting agency, by relying on the initial consent.

| Wording of consent question (Verbal or written) | |
|---|---|
| Key elements to be included in the consent request: | |
| i. | Authorization to collect information from consumer reporting agencies; |
| ii. | Nature of the information sought (e.g. credit information); |
| iii. | Use made by the insurer of the credit information (what will it be used for); |
| iv. | Consent use period (validity); |
| v. | Right to withdraw and consequences (an insured may withdraw consent at any time in writing; however, he or she might not benefit from the insurer's best quote). |

## 4. Keeping customers' credit information confidential and private

The insurer must respect the confidential nature of personal credit information. The only persons who should have access to the information are those who require it to do their job.

Relevant Canadian consumer and privacy protection laws are to be fully complied with. Among these is PIPEDA (Personal Information Protection and Electronic Documents Act), the federal privacy law that sets out rules around how private sector organizations may collect, use or disclose personal information. For example:

> Consent is required for the collection of personal information and the subsequent use or disclosure of this information. Privacy legislation applies at the time that personal information is collected or in cases where the information has already been collected, prior to it being used for a purpose not previously identified. (PIPEDA, Principle 4.3.1)

> Personal information is not to be used or disclosed for purposes other than those for which it was collected, except with the consent of the individual or as required by law. Personal information is to be retained only as long as necessary for the fulfillment of those purposes. (PIPEDA, Principle 4.5)

## 5. Use of credit as a sole variable

The insurer must not refuse to quote or base an insured's renewal rates, or deny, cancel or non-renew a policy of personal insurance solely on the basis of credit information without consideration of other non-credit underwriting or rating variables.

## 6. Legitimate uses of credit information – pricing, underwriting or financing of premiums - modeling

An individual's credit information must not be double counted in rating an individual's premium, consistent with established actuarial practice.

The insurer must seek assurance from suppliers of credit information that the following are not used as a negative factor in any credit scoring models:

i. Inquiries by the consumer for his or her own credit information;

ii. Inquiries relating to insurance;

iii. Income, gender, address, ethnic group, religion, marital status, or nationality of the consumer;

iv. Multiple lender inquiries, if coded by the consumer reporting agency on the consumer's credit information as being from the home mortgage industry and made within 30 days of one another, unless only one inquiry is considered;

v. Multiple lender inquiries, if coded by the consumer reporting agency on the consumer's credit information as being from the automobile lending industry and made within 30 days of one another, unless only one inquiry is considered.

vi. Factors used in establishing an individual's credit information must not include factors expressly prohibited in provincial insurance regulations or bulletins, which may vary by province.

## 7. Handling of Consumer Disputes

Consumer complaints about the insurer's use of a customer's credit information are to be addressed by the insurer in accordance with the complaint procedure provisions as required under federal (i.e. Financial Consumer Agency of Canada) and provincial law.

## 8. Taking adverse action as a result of credit information

**a) The Insurer must treat consumers fairly when they have no record of credit information or they are unable to create a credit score. In particular, this means:**

- Customers with an absence of credit information shall not be denied coverage, cancelled or non-renewed a policy of personal insurance without consideration of any other applicable underwriting factors;
- In the absence of credit information, underwriting and rating decisions will be based upon the relevant information which is available to the insurer.

**b) The insurer must disclose to the consumer adverse action taken only as a result of credit information.**

- Notification should be provided to the consumer explaining the reason for the adverse action and in accordance with applicable Consumer Reporting Legislation laws.

## 9. Refusal of consent

The insurer shall not refuse to provide an insurance quote to the customer, nor refuse to insure a customer, nor terminate or refuse to renew a policy because the customer refuses to give consent to use their credit information. In this situation the customer will be offered a competitive rate but may not qualify for related discounts or the insurers' best quote.

An insurer shall not refuse to provide an insurance quote to a customer, nor terminate or refuse to renew a policy solely because of unfavourable credit information.

## 10. Extraordinary life circumstances

If a customer believes that his or her credit information resulted in an adverse action by their insurer and that their credit has been adversely impacted by an extraordinary life event, the customer could elect to provide a written request detailing the extraordinary event to their insurer. The insurer would then review the decision to use credit information as a rating and underwriting tool for this customer. The request must provide appropriate supporting documentation verifying how and why their credit history was adversely influenced and why it should be reconsidered. If an exception is approved by the insurer, the customer would be re-rated accordingly

Provided that there is sufficient evidence, extraordinary events may be considered by the insurer for the granting of reasonable exemptions. *An "extraordinary life event" could be, for example, an identity theft or a catastrophic event as declared by provincial authorities.*

If deemed necessary at the discretion of the insurer, consumers shall be provided a notice that reasonable exceptions are available and information about how the consumer may inquire further.

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# Options for Managing Flood Costs of Canada's Highest Risk Residential Properties

## A Report of the National Working Group on Financial Risk of Flooding

June 2019

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# Executive Summary

Every year, thousands of Canadians experience financial losses due to severe weather. The losses to insurers and their policyholders and losses to governments and, by extension, taxpayers are escalating. Wildfires, floods, hailstorms and windstorms are occurring with greater frequency and intensity. Scientific evidence published by the Intergovernmental Panel on Climate Change and in the U.S. National Climate Assessment is now showing that the escalation in severe weather around the globe is attributable to climate change and that these loss trends will only worsen in the future. In Canada, as is the case in many nations, flooding is the threat where we are facing the greatest cumulative losses and the threat for which we are least prepared.

Recognizing this emerging trend, the Honourable Ralph Goodale, Minister of Public Safety Canada, the Honourable Larry Doke, Saskatchewan Minister of Government Relations (being responsible for Emergency Management) and Heather Bear, Vice-Chief of the Assembly of First Nations convened a National Roundtable on Flood Risk in Regina in November 2017. As recommended by that National Roundtable, an Advisory Council on Flooding was created in early 2018 with the purpose of advancing the national agenda on flood risk management. An early deliverable of the Advisory Council was the creation of a public-private sector Working Group on the Financial Management of Flood Risk, co-chaired by Public Safety Canada[1] and the Insurance Bureau of Canada (IBC). In May 2018, Federal/Provincial/Territorial Ministers of Emergency Management asked this Working Group to refine options for managing the financial costs of high-risk residential properties while drawing upon international models, such as Flood Re in the United Kingdom. IBC has been asked to report on these options, developed through Working Group consultations, to Public Safety Canada, through the Advisory Council on Flooding. This paper is the resulting product, and was authored by IBC with input from members of the Working Group.

This paper considers the views of both the private and the public spheres of society, and focusses primarily on measures to transfer residential property risk from public sector disaster financial assistance programs, which are funded by the taxpayer, to private sector insurance solutions, which are primarily funded by the property owner. The paper's goal is to present some of the existing options to address the financial management of flood in high-risk zones based on a suite of commonly agreed principles. These principles were first identified at the National Roundtable and have evolved through consultations with various stakeholders. Taken together, the principles are designed to incent community and individual resiliency while decreasing pressure on public finances.

[1] Public Safety primarily worked to facilitate the participation of various stakeholders, and to provide strategic linkages to the other Working Group under the Advisory Council on Flooding (the working Group on Flood Data and Mapping). The views expressed in this paper do not necessarily reflect the view of the federal government.

## These principles are:

### AFFORDABILITY:

An optimal approach should provide affordable protection for high-risk properties to ensure maximum participation (Appendix II).

### INCLUSIVITY:

An optimal approach should provide an insurance solution to all primary-residence property owners irrespective of the level and type of flood risk they face, e.g., pluvial, fluvial or coastal (Appendix III). Indigenous residences, which are often covered by commercial insurance, and other vulnerable communities require particular attention and possibly a concurrent program.

### EFFICIENCY:

The price of insurance should reflect as much of the risk as possible, thereby incenting appropriate flood risk reductions among all stakeholders.

### OPTIMAL COMPENSATION:

Insurance solutions should provide predictable and wholesome compensation to residential property owners and therefore diminish residential pressure on publicly funded disaster assistance programs.

### SHIELD THE TAXPAYER:

An optimal approach should reduce reliance on ongoing taxpayer-funded subsidies by creating the conditions necessary for expansion of private market insurance coverage.

### FINANCIALLY SUSTAINABLE:

An optimal approach should be financially self-sufficient where systemic losses are reduced over time.

Application of these principles involves trade-offs. For instance, the principles of efficiency and affordability can be in opposition. To receive the price signals required to incent prevention and mitigation actions, the homeowner should pay for the full risk that they bear. However, many homeowners, particularly those with low incomes, simply cannot afford the premiums that would be required to cover that full risk.

Consequently, premiums need to be capped, and the resultant residual risk needs to be subsidized from other sources. In any scenario, government investments in flood mitigation are essential to lower the homeowner's risk to an affordable level. Design of the three options listed in this paper involves addressing such trade-offs in varying ways.

Canada must increase its resiliency to residential flood risk to keep people safe and financially viable. The solutions presented below are intended to provide better outcomes for individual Canadians and are less about reducing pressure on public accounts. Currently, flooding is Canada's most costly natural peril and accounts for roughly three quarters of federal Disaster Financial Assistance (DFAA) payments. However residential losses account for only 5-15% of that total - a greater portion by far, perhaps as much as 70%, is spent on recovery of public infrastructure. Therefore, any risk-transferring solution for residential infrastructure will present modest cost-savings for public treasuries. (This paper focuses exclusively on residential property and not on larger public/critical infrastructure, which may require a different approach and should be the subject of further study.)

Regardless, considering the amplifying effects of climate change on future precipitation patterns and sea levels, governments must be concerned about Disaster Risk Reduction – lowering the public safety and personal financial risk of those Canadians living in high risk areas.

The desired end state for flood disaster risk reduction is a future where every Canadian is both physically and financially safe from flooding and where each individual is empowered to manage their own risk. This end state reflects an overall reduction in flood risk and will result from a whole-of-society approach to building resilience (Appendix VII).

A flood disaster risk reduction approach for Canada should fit within the broader Emergency Management Strategy and should take a 'whole of society' perspective. Such an approach should leverage significant stakeholder partnerships in infrastructure to reduce climate risk in the most exposed communities AND elevate risk awareness and incent de-risking efforts amongst all stakeholders. Within this context of lowered risk, insurers can introduce new products and employ premium structures that will further incent responsible behaviour.

## To elaborate, this approach should have three prongs:

**a** **ELEVATE RISK AWARENESS/ENGAGEMENT:**
Elevate consumer and government awareness to incent active flood-risk reduction to ensure price signals are properly received and understood. This should include conveying risk-assessment information to all participants throughout all stages of the property development, transaction, financing and insurance processes.

**b** **IMPROVE RISK IDENTIFICATION:**
Improve and align public-facing risk maps that allow insurers as well as property owners and governments to collaborate on identifying, updating and managing risk. These maps must be evergreen in that they reflect continuous improvement of the underlying flood hazard modelling to reflect investments in flood defences.

**c** **AGGRESSIVELY MITIGATE RISK:**
Aggressively invest in reducing the number of Canadians who live in areas at high risk of flooding, through flood mitigation and strategic retreat from these high-risk areas (Appendix V). This will require bold political leadership that resists allowing people to rebuild in harm's way. Investments in flood mitigation should incorporate natural infrastructure wherever possible, given lower maintenance and increased auxiliary benefits of such approaches.

The options presented below will only be successful at addressing financial risk of flood if undertaken in context with the measures outlined above. Taken together they can provide a roadmap to the desired end state (Appendix VII) that reflects a nationally cohesive, yet regionally flexible approach to addressing flood risk. Given a 'whole of society approach', responsibility for delivering these measures lie with a range of actors from banks, mortgage insurers and realtors, to property and casualty insurers to municipal, provincial and federal government agencies to non-government organizations.

It was recognized by stakeholders that any of the options discussed below need to be considered as decades long, transitory measure to achieve the desired end state. The structure of any option should, as much as possible, incent all actors including governments, insurers and consumers, to reduce flood risk throughout the transition and reward behaviour for doing so.

A number of stakeholders collaborated to conduct significant international analyses (Appendix IV) and chose to focus on three potential options for Canada. A global survey of flood programs shows that approaches vary widely and that no country has a perfect solution to address high risk residential flooding. In Australia, flood insurance is risk based. Insurance premiums are based on the level of flood risk that a property will face, as well as the cost of rebuilding or repairing the property. In the United States, efforts to move the National Flood Insurance Program toward a risk-based funding model, while initially successful, were largely reversed by subsequent legislation. The program continues to have a significant debt, and is also hampered by the government's recent practice of providing only short-term funding for the program. In the Netherlands, the contingent liability for overland flood is endemic and, as a consequence, private insurance is basically unavailable (a large portion of the Dutch population is at high-risk of flooding). When residents get flooded, the government intervenes through a combination of different resilience-building measures that include physical assets retrofits (whenever possible), strategic retreats and property buyouts. In U.K., a high risk insurance solution, called Flood Re, provides insurance for all high risk properties in the country (Appendix VI).

After reviewing international experience, stakeholders focused on three main options to address the financial cost of managing high risk properties. These options can be considered along a spectrum of intervention/effort from a pure market option (low intervention) where high risk homeowners bear all their own risk to a government-backed option where these homeowners are partially subsidized by taxpayers to an structured insurance pool option (High intervention) where these homeowners can be fully protected. The differences along the spectrum relate to the level of programming effort available to assist homeowners.

## Option I – Pure Market Solution: Risk borne by homeowners

In this option, the flooding of private residences is no longer covered by government DFA programs and homeowners can self-insure, purchase insurance from the private insurance market or relocate. There are no subsidies in place to provide perverse incentives and premiums are risk-based, which would mean that a significant portion of homeowners will be excluded from the insurance market. As governments invest in flood defence infrastructure and targeted buyouts of properties at high risk of repeated flooding, insurance becomes more available and affordable. To increase take-up rates, the government could consider introducing means-tested subsidies through taxation-based voucher programs or other mechanisms to ensure that vulnerable populations are not left behind.

Option I strongly meets the Working Group's key principles in two key areas, namely in efficiency and financial sustainability. Insurance premiums are fully transparent in that they reflect the true risk that a homeowner faces. As a result, accurate price signals should incent market behaviour – from pressure on community leaders to mitigate risk, to individual behaviour to enact property-level mitigation. In terms of optimal compensation, this scheme has the potential to provide superior indemnification for the insured, though it falls short for the uninsured and most vulnerable. Another possible strength of this program is its ability to encourage the development of the insurance market, provided that governments refrain from offering broad disaster assistance after an event, thus creating expectations of continuous bailouts in the future. (In some cases, some kinds of government-disaster assistance may still be appropriate post-event, though their frequency and eligibility should be restricted.)

Option I fares poorly in terms of affordability (Appendix II) and inclusivity for the zones most at risk, as insurance may be very expensive to obtain, if available at all, and because the risk falls entirely on the shoulders of homeowners.

International experience has shown that this option may leave significant numbers of Canadians financially exposed. In Australia, few high-risk individuals buy risk-based insurance because it is too expensive. Furthermore, governments may be subject to immense pressure to intervene in the aftermath of a disaster, regardless of their initial stance – Germany's reneging on its anti-interventionist position after two major floods is a case in point.

## Option II – Evolved Status Quo: Risk borne by blend of homeowners and governments

In this option the private sector takes on as much contingent liability for flooding as its risk appetite allows, while leaving the highest-risk properties, where premiums would be unaffordable, to be covered ex post by government DFA programs.

This second option comes out strong from a household affordability standpoint given that no additional contribution is expected from residents at high risk. Once disaster strikes, however, provincial variations in eligibility criteria and payments render affordability inconsistent. Presently, there is significant confusion as to what homeowners can expect from DFA compensation and how such DFA programming relates to insurance payouts (Appendix VIII).

This option maintains pressure on all orders of government to invest in flood mitigation because they continue to hold the contingent liability for properties at highest risk. Expenditures on mitigation may de-risk properties to the point where insurance becomes available and affordable.

This option scores low on optimal compensation, since high-risk homeowners are subject to the limits of what DFA programs would cover. Financial sustainability could become problematic due to the ever-rising pressure of flooding costs for the government. From the point of view of the other principles – inclusivity, efficiency and promoting private market development – Option II falls short, mostly due to provincial DFA variability, its inability to promote mitigating behaviours and the lack of market mechanisms at the individual homeowner's level.

To somewhat reduce the government's exposure, this option could be augmented by transferring some of the government's risk to the insurance and global reinsurance market, similar to what the United States and Mexico are doing with portions of their DFA programs. Although the government would continue to bear some of the risk, the insurance/reinsurance option could provide a buffer, making DFA-type disbursements more predictable from a budgeting and accounting perspective. (Reinsurance can absorb large losses, and commissions are certain and can be easily budgeted. By contrast, DFA outlays are not as easily predictable due to the uncertainty of catastrophic events and the variability of loss amounts. Reinsurance thus provides a government with a better budgeting tool.) Reinsurance premium reductions may also be used to reward desired government behaviour, such as making public investments in infrastructure to de-risk regions at high-risk of flood damage.

## Option III – Create a High-Risk Flood Insurance Pool

This solution involves building a high-risk flood pool of properties that would not otherwise be offered affordable insurance (or any flood insurance). Property owners would pay premiums that are as risk-based as possible. However, to ensure affordability and, therefore, take-up, these premiums could be capped and subsidized through a range of possible mechanisms.

High-risk property owners could be offered overland flood insurance through their existing insurer who would then make the determination on whether to relegate a particular policy to the pool. Premiums are collected by the insurer and then remitted to the pool, providing one source of pool capital. Other sources of capital could include contributions by governments, levies applied to homeowners and levies applied to municipal property tax. The pool could be run in a shared public-private partnership – administered by the insurance industry but governed and guaranteed by the government/global reinsurance market.

Two stages of capitalization would be required. Initially, the pool would require an influx of capital over a transition period to become self-sufficient. Government contributions and levies on homeowners or municipal ratepayers could be applied on a time-limited basis to ensure the pool becomes fully capitalized. To limit drawdowns on pool capital during this period, governments could pay all incoming claims. Once the pool is fully capitalized, these contributions/levies could cease and governments could stop most of their financial assistance for flood-related damage to residential properties.

At this point, a low-maintenance form of capitalization would be required to cover the subsidy necessitated by capping premiums. This ongoing capitalization could come from a range of government contributions or levies. Alternatively, the ongoing subsidy could be limited by offering high-risk consumers several choices of fully risk-priced coverage with varying levels of compensation. The consumer could choose the coverage they can afford.

As a high-risk property is de-risked through individual or community-based mitigation measures, the insurer may choose, upon an annual review, to cover the property as a normal customer thereby providing a means to exit the pool. Capitalization approaches should be structured to ensure that governments, insurers and consumers are properly incented to shrink the pool over time.

Option III scores high points in terms of affordability, inclusivity and optimal compensation, as it offers an insurance product at affordable rates to all high-risk homeowners in Canada. Depending on the measure used to make insurance affordable (different coverage limits, deductibles or subsidies), premiums may be more or less efficient in reflecting risk and eliciting the desired behaviours.

Similarly, the peace of mind conveyed by the fact that affordable insurance is within reach, no matter the risk profile, may relay a false sense of security that could delay policyholders from taking important mitigation action, especially if repeat claims are allowed to be part of the program. For these reasons, Option III gets only passing grades in terms of its efficiency. Although designed to withstand losses and remain financially sustainable, the pool would require an ongoing focus on mitigation and, from time to time, it may require a capital infusion. This is the reason for a neutral-to-strong mark in terms of its financial sustainability.

## Measuring the three options against the six principles

A summary of how these options have been scored is provided below in Table 1. These scores are qualitative and inherently subjective. They result from lengthy stakeholder discussions and can change based upon policy choices made when executing each option. This summary is, therefore, not definitive.

### Table 1: Reviewing Options against Principles

🟢 STRONG 🟡 NEUTRAL 🔴 WEAK

| | RISK BORNE BY | | |
|---|---|---|---|
| **PRINCIPLES** | **HOMEOWNER (OPTION 1)** | **GOVERNMENT (OPTION 2)** | **HIGH-RISK POOL (OPTION 3)** |
| Affordability | 🔴 | 🟢 | 🟢 |
| Inclusivity | 🔴 | 🟡 | 🟢 |
| Efficiency | 🟢 | 🔴 | 🟡 |
| Optimal Compensation | 🟡 | 🔴 | 🟢 |
| Shield the Taxpayer | 🟢 | 🔴 | 🟡 |
| Financially Sustainable | 🟢 | 🟡 | 🟡 |

The multi-stakeholder Working Group believes the three options presented in this note offer viable courses of action to reduce the number of properties at high risk of flooding. All of them have distinct strengths and weaknesses in the way they meet the guiding principles.

For any of these plans to be successful, all levels of government must commit to long-term investment in complementary measures such as mitigation, better flood mapping and consumer awareness initiatives. It is also necessary to create a system where mitigation investments are reflected in the models insurers use to price risk, which should then lead to improvements in availability and affordability of insurance. Each of these plans has the potential to take Canada through a period of transition to the desired end state.

# Options for Managing Flood Costs of Canada's Highest Risk Residential Properties

## Mandate

The Canadian Minister of Public Safety and the Saskatchewan Minister of Government Relations (being responsible for Emergency Management) convened a National Roundtable on Flood Risk in Regina in November 2017. As recommended by that National Roundtable, the Advisory Council on Flooding was created in early 2018 with the purpose of advancing the national agenda on flood risk management. An early deliverable of the Advisory Council was the creation of a public-private sector Working Group on the Financial Management of Flood Risk, co-chaired by Public Safety Canada[2] and the Insurance Bureau of Canada (IBC). In May 2018, Federal/Provincial/Territorial Ministers of Emergency Management asked this Working Group to further refine options for managing the financial costs of high-risk residential properties while drawing upon international models such as Flood Re (Appendix VI) in the United Kingdom. IBC has been asked to report on these options, developed through Working Group consultations, to Public Safety Canada, through the Advisory Council on Flooding. This paper is the resulting product, and was authored by IBC with input from members of the Working Group.

## Issue

Given a progressively warming atmosphere and rising sea levels, current climate forecasts project that the escalation in flood events, as witnessed over the past decade, will continue into the future. Canada must increase its resiliency to residential flood risk to keep people safe and financially viable. The solutions presented below are intended more to provide better outcomes for individual Canadians and less about reducing pressure on public accounts. Currently, flooding is Canada's most costly natural peril and accounts for roughly three quarters of federal Disaster Financial Assistance (DFAA) payments (Appendix VIII). However residential losses account for only 5-15% of that total - a greater portion by far, perhaps as much as 70%, is spent on recovery of public infrastructure – an issue not covered by this paper. Considering the amplifying effects of climate change on future precipitation patterns and sea levels, governments are concerned about Disaster Risk Reduction – lowering the public safety and personal financial risk of those Canadians living in high risk areas.

[2] Public Safety primarily worked to facilitate the participation of various stakeholders, and to provide strategic linkages to the other Working Group under the Advisory Council on Flooding (the working Group on Flood Data and Mapping). The views expressed in this paper do not necessarily reflect the view of the federal government.

## Flood Disaster Risk Reduction and a Desired End State

The desired end state for flood disaster risk reduction is envisioned as a future where every Canadian is both physically and financially safe from flooding and where each is enabled to manage their own risk. This end state reflects an overall reduction in flood risk and will result from a whole-of-society approach to building resilience (Appendix V). Targeted investment in climate action and disaster mitigation that includes flood risk reduction will result in fewer Canadians living in high-risk zones with better access to affordable flood insurance.

A Flood Disaster Risk Reduction approach for Canada should fit within the broader Emergency Management Strategy and should take a 'whole of society' perspective. Such an approach should leverage significant government partnerships in infrastructure to reduce climate risk in the most exposed communities AND elevate risk awareness and incent de-risking efforts amongst Canadians. Within this context of lowered risk, insurers can introduce new products and employ premium structures that will further incent responsible behaviour.

## To elaborate, this approach should have three prongs:

**a** **ELEVATE RISK AWARENESS/ENGAGEMENT:**
Elevate awareness of governments and Canadians to incentivize active risk reduction and engagement on flood risk to ensure price signals are properly received. This should include risk assessment being conveyed throughout all stages of the property development, transaction, financing and insurance process;

**b** **IMPROVE RISK IDENTIFICATION:**
Improve and align public facing risk maps that allow insurers as well as property owners and governments to collaborate on identifying, updating and managing risk. These maps must be evergreen in that they reflect continuous improvement of the underlying flood hazard modelling to reflect investments in flood defenses;

**c** **AGGRESSIVELY MITIGATE RISK:**
Aggressively invest in reducing the number of Canadians living in areas of prioritized high flood risk through flood mitigation and relocation from high-risk areas (strategic retreat-Appendix V). This will require bold political leadership and resistance to rebuilding in harm's way. Investments in flood mitigation should incorporate natural infrastructure wherever possible given lower maintenance and increased auxiliary benefits of such approaches.

The options presented below will only be successful at addressing financial risk of flood if undertaken in context with the measures outlined above. Taken together they can provide a roadmap to the desired end state that reflects a nationally cohesive, yet regionally flexible approach to addressing flood risk. Given a 'whole of society approach', responsibility for delivering these measures lie with a range of actors from banks, mortgage insurers and realtors, to property and casualty insurers to municipal, provincial and federal government agencies to non-government organizations.

Furthermore, stakeholders have emphasized that we are decades away from reaching that desired end state and that implementation of any of the options below should occur over a transition period. The structure of any option should, as much as possible, incent all actors including governments, insurers and Canadians, to reduce flood risk throughout the transition and reward behaviour for doing so.

## Canadian Considerations

There are 10.9 million residential properties across Canada. Most are at risk of water damage of some sort (e.g., sewer backup, rain damage, burst pipes). However, based on flood modelling conducted by IBC, 2.2 million homes are at risk of overland flood, including fluvial (riverine), pluvial (rainfall) and coastal floods[3]. The number of homes at high risk would vary from 800 thousand at a 1 in 20 year risk categorization to 1 million using a 1 in 100 year risk categorization.

The limited insurability of overland flood risk has meant that taxpayers are bearing a significant burden for overland flood damage across the country, as is evident by examining spending on the federal Disaster Financial Assistance (DFAA) program. Since the 1970s, federal transfer payments for flood assistance have totaled $4.9 billion– or roughly two/thirds of total DFAA spending. These costs have more than quadrupled in 40 years, swelling from a cumulative $300 million in the 1970s, to $1.2 billion in the 2000s, to a staggering $3.7 billion in the first four years of this decade. Only 5-15% of these DFA costs are for residential losses – the rest is dominated by restoration of public infrastructure. An IBC assessment of provincial DFA programs shows a similar cost breakdown. While the recent restructuring of the DFAA has devolved more of these costs to provincial tiers of government, and although residential losses vary from province to province, taxpayers remain the ultimate funding source for flood loss compensation.

[3] IBC Flood analysis, JBA and Associates Risk Mapping, January 2016

Despite the exclusion of overland flooding, insurers have paid for sewer back up losses related to flood on residential policies, as well as for automotive and commercial losses as well as ex gratis payments such as those made following the 2013 southern Alberta floods. Extreme weather payouts including flood have more than doubled every five to 10 years since the 1980s. For each of the past six years, these industry payouts have been close to or above $1 billion in Canada. By comparison, insured losses averaged $400 million a year over the 25-year period from 1983 to 2008. As of 2005, water claims have become the number one cause of property insurance losses across the country. The impacts of extreme weather, driven by climate change, are escalating.

However even in the current context the situation is changing. In 2015, consistent flood models became available for all of Canada south of sixty degrees latitude. These models enabled some insurers to begin underwriting overland flood risk. As of spring 2019, 16 insurers now offer overland flood products to about 77% of Canadian property owners. IBC estimates that about 34% of Canadians are now insured for overland flood risk. This number will increase as these flood models improve and as the nascent private insurance market develops. As society transitions towards a future where most low and medium risk is borne by the private sector it will create a challenge that must be considered in the context of the 'high risk' solution.

The challenge facing insurers is how to predict risk in an era of climate change. Flooding is complex and we expect that the return periods used to gauge flood risk are not static. In other words, severe flooding is becoming more common. Overland flooding is comprised of three types of peril. First, fluvial or floodplain flooding is water that overflows the banks of a river or lake to inundate nearby properties. This is flooding which is easiest to model and predict because it follows known topography.

Alternatively, pluvial or urban flooding results when intense rainfall overwhelms urban drainage systems and water flows into nearby homes. Pluvial flooding is much more difficult to predict and for insurers to model and yet with climate change, the frequency and intensity of such severe storms is rising. These storms can happen anywhere and even low risk communities may get overwhelmed.

Finally, coastal flooding from storm surge is also difficult to model given tidal influences and will be compounded by rising sea levels projected over the next few decades.

As a result, observers sometimes believe that insurers will only assume low and medium risk where they are guaranteed to profit, leaving high risk properties alone. However, in actuality, insurers are pressured by consumer demand and competition to take on increasing amounts of unpredictable risk and are seeking to manage this by diversifying their exposure across geographies and by using deductibles and compensation limits or caps to control uncertainty. As we have seen in other countries, insurers will avoid known areas of high risk but will eventually cover most other scenarios and offer more generous compensation as the market matures.

Addressing the financial risk of high-risk residential properties alone does little to address the overall risk profile of the nation. There has been a growing recognition by insurers and other stakeholders that flooding is a significant risk for Canadians that demands a whole-of-society response. This approach would leverage significant government partnerships in infrastructure to reduce climate risk in the most exposed communities. As well, it elevates risk awareness and incents de-risking efforts among consumers and businesses. In this framework of lowered risk, insurers can introduce new products and use premium structures that will further encourage responsible behaviours.

The University of Waterloo and the Geneva Association provided international insights to the Working Group and their examination of the flood management programs in G7 countries offers insights into solutions that may be applicable in Canada. Every country with a flood management program has had to wrestle with the same issues. The approaches developed by other nations span along a continuum that ranges from insurance-based to government relief solutions, including approaches that are fully private, fully public or in between.

To make residential flood insurance commercially viable in Canada, the international experience clearly points to four preconditions that are essential to establishing a strong flood risk management culture.

1. There must be accurate and up-to-date flood hazard mapping to allow all tiers of government – as well as insurers, developers and other key private sector stakeholders – to make smart decisions about asset management, urban planning and flood risk management;

2. There must be ongoing and adequate investment in public and private flood defences, and sewer and storm water infrastructure;

3. There must be widespread awareness of flood risk and a sound understanding by all stakeholders – including governments, communities and individuals – of the physical and financial consequences of flood risk and the tools available to ensure Canadians are prepared; and

4. Access to post disaster assistance for residential flooding should be limited/structured in a manner that encourages investments in mitigation and strong disaster reduction behaviours.

International experience also shows that there should be careful consideration given to a budget line approach where a clear cost-benefit relationship can be established between the capital needed to fund rebuilding and the investments made to reduce risk.

Whichever solution is adopted, it should be expected that a period of transition will occur. Key advice provided by stakeholders during the development of the options highlighted the need for both a transition period and acknowledged the evolving and increasing impact climate change will have on the financial risk facing high risk properties. The need for a transition period stems chiefly from the lack of authoritative and reliable risk mapping coupled with a lack of flood risk awareness by Canadians. Courageous decisions to systematically relocate Canadians out of harm's way, a process called strategic retreat (Appendix V), should be an element of any overall strategy.

As climate change will continue to impact the risk profile of Canadian communities, the number of Canadian properties at high risk to overland flood damages is expected to grow in the absence of significant action taken to reduce risk.

It is important to understand that no solution we have found can sustain itself financially if the number of properties at high risk grows. To ensure the financial stability of, whichever program is put in place, there must be a supporting effort to reduce the number of properties deemed 'high risk'. Increasing attention on flood mitigation will be required in the coming years and links must be made to flood models to reflect when 'derisking' has occurred to ensure that insurance offerings reflect the change in terms of availability and affordability (Appendix II).

## Disaster Financial Assistance in Canada

### PROVINCIAL AND TERRITORIAL GOVERNMENTS

Every provincial and territorial government has a responsibility for disaster management, including the financial management of disasters. Each government has established financial relief programs for homeowners and residential tenants affected by a disaster. It is up to each province and territory to determine eligibility, but most disaster relief programs mirror the eligibility requirements of the federal DFAA to ensure the province or territory qualify for maximum cost sharing of disasters with Canada.

If the damage to the residential property was the result of an event that could not be insured, the homeowner is eligible for payments under their provincial/territorial disaster relief program if the provincial or territorial government chooses to provide financial assistance. (Note: In Ontario the disaster assistance may be made available for uninsured essential losses. Ontario is unique in covering uninsured losses vs. those that are uninsurable). However, all of these programs limit the level of relief they provide both in caps and in eligibility requirements. Only primary residences are covered. They are not insurance programs.

If insurance is "readily and reasonably available," disaster assistance programs do not cover the damage regardless of whether the property owner purchased the insurance or knew it existed, with the exception of Ontario.[4]

### FEDERAL GOVERNMENT

Disaster Financial Assistance Arrangements (DFAA) is a federal program that reimburses provinces and territories for some of their disaster response and recovery costs related to catastrophic events. One of the eligible costs provinces and territories can make claims for under DFAA is assistance paid to owners of residential properties. One of the aims of the program is to help provinces and territories support disaster recovery through financial assistance to property owners repair damage to basic and essential property only to its pre-disaster condition. The program is not intended to compensate for all damages that result from a disaster. The DFAA guidelines clearly indicate that damage or losses that are insurable (readily and reasonable available) are not eligible under the program.

[4] Beeby, D. (2017, January 22). Homeowners ill-informed about flood compensation, poll suggests. Retrieved from: www.cbc.ca/news/politics/flood-insurance-basement-disaster-compensation-goodale-feltmate-1.3941023

## Principles

This document explores a range of financial solutions to manage costs for properties that are considered at high risk of flooding. These solutions are necessary to reduce homeowners' financial vulnerability in the short-term and to provide them with enough time to lower their contingent liability of flooding over the longer run. These options will be measured according to the following principles which have evolved through consultations with stakeholders. Taken together, the principles are designed to incent community and individual resiliency while decreasing pressure on public finances.

## These principles are:

**AFFORDABILITY:**
An optimal approach should provide affordable protection for high-risk properties to ensure maximum participation.

**INCLUSIVITY:**
An optimal approach should provide an insurance solution to all primary residence property owners irrespective of the level and type of flood risk they face (e.g. pluvial, fluvial, coastal – Appendix III). Indigenous residences, which are often covered by commercial insurance, and other vulnerable communities require particular attention and possibly a concurring program.

**EFFICIENCY:**
The price of insurance should reflect as much of the risk as possible, thereby incentivizing appropriate flood risk reductions amongst all stakeholders.

**OPTIMAL COMPENSATION:**
Insurance solutions should provide predictable and fulsome compensation to residential property owners and therefore diminish residential pressure on publicly funded disaster assistance programs.

**SHIELD THE TAXPAYER:**
An optimal approach should reduce reliance on ongoing taxpayer-funded subsidies by creating the conditions necessary for expansion of private market insurance coverage.

**FINANCIALLY SUSTAINABLE:**
An optimal approach should be financially self-sufficient where systemic losses are reduced over time.

Application of these principles involves trade-offs. For instance, the principles of efficiency and affordability can be in opposition. To send the price signals required to fully incent consumer behavior, the homeowner should pay for the full risk that they bear. However, many homeowners, particularly those with low-incomes, simply cannot afford the premiums they would pay if truly risk-priced.

As a result, premiums need to be capped and the resultant residual risk needs to be subsidized from other sources. In any scenario, investments in flood mitigation need to be made which lower the homeowner's risk to an affordable level. Design of the three options listed below involves addressing such tradeoffs in varying ways.

There can also be a trade-off between affordability and financial sustainability and a solution should aim to optimize the compromise between the two as transparently as possible. For instance, it is important that the connection between price and risk be clear and obvious, even in circumstances where affordability is a priority. Premium caps, a means-based voucher system and/or tax rebates could be considered to maintain the plan's affordability. To contain the scheme's size and ongoing costs to government, it will be important to consider measures such as admission restrictions (to existing homes rather than new buildings, or to only primary residences, for example), the establishment of better building codes, climate-savvy land use planning and limited assistance payouts. Furthermore, financial efficiencies could be achieved through improvements to program administration and delivery.

## International Review

The University of Waterloo and the Geneva Association conducted an extensive international review. Through their efforts, it was demonstrated to stakeholders that the approach to handling the high risk of flood varies from country to country.

Australia's flood insurance is risk based private market where the system calculates premiums that reflect the level of flood risk a property will face, as well as the cost of rebuilding or repairing the property. The role of the government is limited to mitigation investment, flood mapping and basic event aid that is income-tested; including to property owners to offset costs to make homes safe and habitable where insurance does not respond. Information on flooding and data is available through the National Flood Information Database which insurers can use to calculate premiums for an individual address as opposed to a postal code. Many high risk homeowners simply do not purchase expensive insurance and face financial ruin if a severe flood occurs.

In the United States, efforts to move the National Flood Insurance Program toward a risk-based funding model, while initially successful, were largely reversed by subsequent legislation. All home owners with a 1% risk or higher annual chance of flood with a mortgage from federally regulated or insured lenders are required to have flood insurance. The program continues to have a significant debt, and is also hampered by the government's recent practice of providing only short-term funding for the program. To contain costs, government offers loans or grants to homeowners in order to undertake mitigation efforts, on a means-tested sliding-scale. Local governments have to restrict development in 1/100yr flood zones or have the flood zones elevated if not protected by a levee.

In the Netherlands, the contingent liability for overland flood is endemic and, as a consequence, private insurance is basically unavailable (a large portion of the Dutch population is at high-risk of flooding). When residents get flooded, the government intervenes through a combination of different resilience-building measures that include physical assets retrofits (whenever possible), strategic retreats and property buyouts. By focusing on mitigation, the Dutch government is investing in improvements in communities' flood resilience, which ought to result in much less flooding in the future. Despite high up-front costs, heavy public intervention and implementation complexities due to federal-provincial layers of government – the Dutch approach to flood remains the fastest way to transition residual risk communities to insurable levels.

The U.K.'s solution for managing the financial risks for properties at high risk of flooding (known as Flood Re (Appendix VII) came into effect in April 2016. It is a temporary plan to ease high risk regions into a risk-based pricing regime. It was designed to be in place until 2039 to provide enough time for government to adequately de-risk private properties to levels granting affordable insurance. After the transition period is complete, the expectation is for consumers to be able to purchase insurance directly from insurers at a risk-based price. However, this system has already undergone changes and remains largely untested. For example, properties in the highest tax bracket were originally going to be excluded from the system, but due to political pressure, they are now being included.

The central government is responsible for both releasing building permits and providing disaster assistance, so incentives have long been aligned for responsible land plan use – quite the opposite on this side of the ocean, where federal and provincial governments responsible have little control over issuing building permits. One takeaway from the British experience that merits some consideration is that the scheme will take quite some time to get up and running. Furthermore, UK insurers are skeptical that governments will make the mitigation investments necessary for Flood Re to wind down by 2039.

## Options

Leveraging this international review, the Working Group has developed three possible options for the financial management of properties at high risk of flood. These options can be considered along a spectrum of intervention/effort from a pure market option (low intervention) where high risk homeowners bear all their own risk to a government-backed option where these homeowners are partially subsidized by taxpayers to an structured insurance pool option (High intervention) where these homeowners can be fully protected. The differences along the spectrum relate to the level of programming effort available to assist homeowners.

The underlying assumption for the three options is continuous investment in protective infrastructure and in targeted buyouts to shrink the size of the group at high risk. Each one of these options has strengths and weaknesses and the selection of any one involves tradeoffs based on government priorities.

### OPTION I – PURE MARKET SOLUTION - RISK BORNE BY HOMEOWNERS:

Private residences would no longer be covered by DFA programs and homeowners either self-insure, move, or transfer their flood contingent liability to the private insurance market. There are no subsidies in place to create perverse incentives and premiums are risk-based, which may mean that a portion of high-risk homeowners will opt out of the insurance market. As the government invests in adaptive infrastructure and targeted buyouts of immitigable properties, insurance becomes more available and affordable. To increase take-up rates, the government could consider introducing means-tested subsidies through taxation-based voucher programs or other mechanisms to ensure that vulnerable populations are not 'left behind'.

### OPTION II – EVOLVED STATUS QUO - RISK BORNE BY BLEND OF HOMEOWNERS AND GOVERNMENTS:

In this option the private sector takes on as much contingent liability for flood as its risk appetite allows, while leaving the highest risk properties, where premiums would be unaffordable, to be covered ex post by government DFA programs. To somewhat reduce the government's exposure, this option could be augmented by transferring some of the government's risk to the global re-insurance market, similar to what the United States and Mexico are doing with portions of their own DFA programs. To do so, the government would need to define its risk appetite and leave re-insurers to take on the excess loss up to a pre-defined maximum liability, with anything in excess being borne by taxpayers. Although the government would continue to bear some of the risk, the re-insurance option would provide a buffer, making DFA-type disbursements more predictable from budgeting/accounting perspective. Note that the greater the number of jurisdictions participating, the lower the relative premium due to risk diversification. Reinsurance premium reductions may also be used to reward desired government behavior, such as making public investment in infrastructure investments to de-risk priority areas. This option is the one that received the least amount of attention amongst Working Group members as it is the closest we have with the status quo.

### OPTION III – CREATE A HIGH RISK FLOOD INSURANCE POOL:

This solution involves creating a high risk flood pool of properties that is managed separately from what is considered normally insurable risk. The pool is run in a shared public-private partnership – administered by the insurance industry but governed and guaranteed by the government/global reinsurance market. The pool would need sources of both pre-capitalization to get the pool up and running and ongoing capitalization to subsidize the difference between true risk pricing and premium caps needed to assure affordability. The pool could be pre-capitalized either through a fund contributed to by governments, similar to how the Caribbean Catastrophe Risk Insurance Facility (CCRIF) was set-up, and then be supported by premiums paid into the pool and levies assessed on all homeowners or, if feasible, municipal ratepayers. In the meantime, claims could be paid out through federal and provincial disaster assistance programs. Ongoing capitalization could be paid by levies and/or through government contributions. Ongoing capitalization must be structured to ensure that all actors are incented to reduce the size of the pool over time.

This was the option that was the most discussed during meetings with stakeholders. Working group members debated the design of proper incentives (both positive and negative) to stimulate appropriate de-risking behaviour on the part of homeowners. Concerns were raised on how to ensure proper incentives were designed to ensure that government mitigation investments would continue. Other concerns focused on ensuring that the private market took on as much risk as possible and did not use the pool to enhance profitability.

## Options assessment

In this section, each option will be examined with respect to how well it meets the key principles (see above) and the expected impacts for key constituencies such as federal and provincial/territorial governments, private industry and individual homeowners. Wherever applicable, we will tease out lessons from international jurisdictions that use similar schemes.

### OPTION I – PURE MARKET SOLUTION - RISK BORNE BY HOMEOWNERS:

In Option I, government focuses solely on mitigation efforts and strategic retreats and does not provide financial relief to individual homeowners, no matter how large and devastating the flood event. To manage their contingent liability for flood, residents have the option to either self-insure or to obtain private coverage. Very rapidly, competitive market forces and rising demand will accelerate the expansion of private insurance supply to provide the option of coverage for nearly all residential properties in Canada, bar the immitigable ones or those for whom effective mitigation would be too costly (in which case, the government could provide buyout options and means-tested premium subsidies). Even with widespread availability, some Canadians may find the cost of coverage to be prohibitive and these homeowners may decide to self-insure more by necessity than by choice.

Clear communication about government's intention to stop providing disaster relief, and, as importantly, the resolve to follow up on those intentions post-event is paramount for the success of Option I and for the expansion of the private market. Also, equally important is active communication about flood risk and mitigating measures that homeowners can undertake to lower their risk as well as the establishment of a national program for climate-smart retrofits and a shared federal/provincial program for larger infrastructure investment in municipalities.

In order to facilitate the move towards Option I, the government could set a short transition timetable for DFAA/DFA reform in which it develops national flood risk maps, conducts active communication campaigns and provides enough time for homeowners to prepare, while continuing to offer relief assistance.

To contain costs, government could offer loans or grants to homeowners in order to undertake mitigation efforts, on a means-tested sliding-scale. At the end of the transition period, to incentivize insurance uptake and responsible mitigation while providing some form of financial buffer, the government could consider assisting flood victims mostly through loans rather than grants, very much like FEMA currently does.

The closest example to this scheme is the Australian model. The Australian model is based on a private-market solution, where flood cover is not subsidized and largely risk-priced, and where government's role is limited to mitigation investment, flood mapping and basic post event aid that is income-tested; including to property owners to offset costs to make homes safe and habitable where insurance does not respond. The Australian insurance industry developed an industry-wide flood mapping tool, which most insurers use to determine risk zones and for pricing (though insurers can use additional information as they see fit).

This helps create consistency in coverage across the industry – with insurers sharing a similar view of risk. Insurers can choose whether or not to offer flood cover but when they do, legislation requires that it be bundled with basic home insurance. Over 90% of insured homeowners have flood cover. If flood is not covered, legislation also requires that insurers clearly inform policyholders.

The definition of "flood" is also set by federal legislation, so that there is little confusion as to whether or not an event is covered and applicability of coverage does not depend on each insurer's interpretation. The coverage offered is very comprehensive and only ocean surge is excluded.

The insurance industry is now covering a substantial level of flood risk exposure, and, as a result, premiums have increased dramatically since the legislation was introduced. Flood insurance for high-risk properties is available, but is very expensive – and as a consequence virtually all high-risk zones remain uninsured. (Premiums for flood insurance alone in these areas can average over $10,000 while the average premium for all other perils together in these areas is in the order of $1,000). Option II would be based on a similar model to Australia's, covering most of the flood risk, with perhaps some targeted premium subsidies for vulnerable populations.

### STRENGTHS:

Option I's biggest strength is perhaps its efficiency in leveraging market incentives to encourage de-risking behaviours. These include investing in adaptive measures for existing private infrastructure, and encouraging strategic retreat in areas where risks cannot be mitigated, but also demanding better standards for new communities with respect to land use planning, building codes and materials. The ultimate result should be less residential flooding and lower treasury outlays in the future. Another advantage is that this scheme allows government to focus almost exclusively on mitigation instead of having to devote resources to disaster management. Last but not least, private insurance is more efficient than disaster assistance in emergency response situations as qualifying criteria are much less ambiguous and claim payments tend to be delivered much quicker, allowing flood victims to recover sooner.

### WEAKNESSES:

Option I's key weakness is its potential to lead to avoidance. Experience in Australia and Germany however show that this model is problematic. In Australia, many high risk homeowners simply do not purchase expensive insurance. They roll the dice and face financial ruin if a severe flood occurs. In Germany, governments have stepped in and bailed homeowners out despite having discontinued formal government assistance programming. The political pressure has proven to be just too great. At this time, it is likely similar problems would emerge in Canada.

### FIT WITH GUIDING PRINCIPLES (TABLE 2):

Option I strongly meets the key principles in several areas, namely in efficiency, and financial sustainability, all thanks to full price transparency and its ability to leverage market mechanisms to incentivize the right behaviour. In terms of optimal compensation, this scheme has the potential to provide superior indemnification for the insured, though it falls short for the uninsured. Another possible strength of this program is its ability to encourage the development of the insurance market, provided that governments refrain from offering disaster assistance post-event, thus creating expectations of continuous bailouts in the future.

This is a simple principle, but not an easy one. Government may be subject to immense pressure to intervene in the aftermath of a disaster, regardless of its initial stance – Germany's reneging on its anti-interventionist position after two major floods is a case in point. Meanwhile, Option I fares poorly in terms of affordability, and inclusivity for the zones most at-risk as insurance may be very expensive to obtain, if available at all, and because the risk befalls entirely on the shoulder of homeowners.

## Table 2: Reviewing Option 1 against Principles

| ● STRONG ● NEUTRAL ● WEAK | RISK BORNE BY | |
|---|---|---|
| **PRINCIPLES & OBJECTIVES** | **HOMEOWNERS (OPTION 1)** | |
| Affordability | ● | Private coverage is very expensive |
| Inclusivity | ● | Most high-risk Canadians won't be covered |
| Efficiency | ● | Absolute risk-price transparency, elimination of perverse incentives |
| Optimal Compensation | ● INSURED ● UNINSURED | Varies according to protection status |
| Shield the Taxpayer | ● IN THEORY | Strong incentives to retrofit assets and/or avoid moving into a high-risk area, however government may feel obliged to assist disaster victims, thus creating expectations for future bail-outs |
| Financially Sustainable | ● | Parallel mitigation may be accelerated |

### OPTION II – EVOLVED STATUS QUO - RISK BORNE BY BLEND OF HOMEOWNERS AND GOVERNMENTS:

This option is very similar to the status-quo, as provincial/federal governments (taxpayers) are in charge of managing residual risk properties through the DFA/DFAA and they have the option (though so far unexercised) of using the insurance and reinsurance market to off-load a portion of that risk.

For the uninsured portion, the Dutch model may offer some insights on how to manage residual risk properties. In the Netherlands, the contingent liability for overland flood is endemic and, as a consequence, private insurance is basically unavailable (a large portion of the Dutch population is at high-risk of flooding). When residents get flooded, the government intervenes through a combination of different resilience-building measures that include physical assets retrofits (whenever possible), strategic retreats and property buyouts.

By focusing on mitigation, the Dutch government is investing in improvements in communities' flood resilience, which ought to result in much less flooding in the future. Despite high up-front costs, heavy public intervention and implementation complexities due to federal-provincial layers of government – the Dutch approach to flood remains the fastest way to transition residual risk communities to insurable levels.

One barrier to implementing Dutch style interventions is that municipalities stand to lose tax revenue/population, though this may be what is required to achieve the federal government's objective of reducing the overall risk in the system and ultimately DFAA costs. These issues may be amplified in communities where there are geographical or socio-economic limitations which restrict options for relocating residents.

**STRENGTHS:**

Option II is the simplest to implement as it does not require any major change to the current system. Furthermore, the use of the insurance and reinsurance market conceivably allows for the partial risk transfer to the private sector, which could reduce the volatility of disaster assistance payments, making flood risk more predictable and sustainable. This option can be evaluated as affordable, at least pre-event, as it doesn't require any targeted outlays on the part of high-risk residents to manage their flood contingent liability.

Last but not least, insurance and reinsurance premiums may be structured to incent de-risking by local governments, including through investments in mitigation infrastructure and by limiting building permits in flood zones.

**WEAKNESSES:**

This policy option falls short in several areas:

1. It is expensive for governments, and may not be fiscally sustainable in an ever-warmer and flood-prone climate.
2. It does not eliminate moral hazard at the individual resident level. There is no price mechanism to fully reflect the inherent flood liability risk and thus no market-based incentives to encourage mitigation (this is a big reason why the burden on the government is growing);
3. It creates uncertainty with respect to eligibility and compensation amounts;
4. It reinforces expectations for ongoing government bailouts, thereby hindering demand for private insurance;
5. It lacks clarity concerning how private sector insurance and disaster assistance programs ought to work together. For instance, in some provinces, sewer back-up is excluded from disaster assistance, but overland flood is eligible. Concurrent causation events, capped coverage and variable flood definitions all have the potential to create administrative difficulties and leave communities inadequately protected;
6. It lacks efficiency from an administrative point of view – provinces may have to wait up to ten years before receiving DFAA transfers;
7. The high cost of insurance and reinsurance may not offer much savings to governments;
8. The government's tendering process for selecting an insurer or reinsurer adds complexity to the process.

### FIT WITH GUIDING PRINCIPLES (TABLE 3):

Option II comes out strong in terms of household affordability given that no additional contribution is expected from residents at high risk.

Once disaster strikes, however, provincial variations in eligibility criteria and payments render affordability inconsistent. Financial sustainability is problematic due to the ever-rising pressure of flooding costs for the government, though this could be somewhat offset if some of the risk is transferred to the private market.

From the point of view of the other principles – inclusivity, compensation, efficiency and promoting private market development – Option II falls short, mostly due to provincial DFA variability, lack of de-risking behaviour by the individual and the lack of market mechanisms at the individual homeowner's level.

## Table 3: Assessing Option 2 against Principles

● STRONG ● NEUTRAL ● WEAK

| | RISK BORNE BY | |
|---|---|---|
| **PRINCIPLES** | **BLEND OF HOMEOWNERS AND GOVERNMENTS (OPTION 2)** | |
| Affordability | ● PRE-EVENT ● POST-EVENT | It depends on province & discretionary trigger & peril |
| Inclusivity | ● | Although most Canadians are covered, limitations to primary residences and the uncertainty most Canadians face with payouts affects it's rating here |
| Efficiency | ● | Little risk price-transparency, fosters perverse incentives |
| Optimal Compensation | ● | Varies according to province & discretionary trigger & peril; long waiting times to get relief due to excessive bureaucracy and uncertainty re. eligibility |
| Shield the Taxpayer | ● | Taxpayers subsidize flood losses albeit at different levels across the country |
| Financially Sustainable | ◐ | Parallel mitigation and the use of re-insurance market are needed to contain growing public costs |

### OPTION III – CREATE A HIGH-RISK FLOOD INSURANCE POOL:

This solution involves building a high risk pool of properties that is managed separately from what the private market is willing to insure. The pool can be structured in many different ways and because of its complexity, several possible measures are considered regarding its operating principles, capitalization and governing rules.

### GOVERNANCE:

The pool could be run as a shared public-private partnership – administered and operated by the insurance industry but guaranteed by the government (federal/provincial/municipal) and the global reinsurance market. Its Board could be comprised of representatives from different orders of government, the insurance industry and consumer groups.

The pool could be centrally administered but could operate regional sub-pools to limit cross-subsidization between jurisdictions and to account for the varying levels of risk and land-use policy across the country. This would also sharpen incentives around mitigation and land-use planning.

The scheme should be a temporary solution to replace government assistance to private residents. Its transitory nature would be contingent on continuous mitigation efforts from all levels of government, private residents and infrastructure owners.

Due to the centrality of mitigation, de-risking incentives should be embedded in the scheme's operations. For example, individual homeowners could be required to show proof of spending in retrofitting measures to obtain premium discounts and/or to continue to qualify for a subsidy. All levels of government should be required to invest in protective infrastructure and commit to a plan that identifies at-risk regions and sets yearly targets to mitigate flood risk in these areas. Failure to do so could result in financial penalties, for instance, in the form of pool re-capitalization requirements.

Municipalities and provincial governments could together commit to providing needed infrastructure investment – first by identifying the properties at risk and costing out the required projects, second by setting yearly investment targets to de-risk and committing to reaching those goals and finally by tracking progress on their own roadmaps to flood resilience.

### OPERATING MECHANICS:

The pool is meant to be a transitional mechanism to a future state where risk mitigation and market competition has resulted in private market overland flood products being available to all Canadians. For this transition to take place, the pool must be structured to:

- Continuously incent governments to invest in targeted flood mitigation
- Continuously incent insurers to expand their coverage outside the pool
- Continuously incent homeowners to undertake property level mitigation measures

The insurance industry would serve as the distribution channel, while providing underwriting, claims handling, administrative and operational functions for the pool.

The pool would guarantee automatic admission to residents that are willing but unable to access private flood insurance – either because it is not yet available in their geographic area or because the premiums would be prohibitively expensive. Although flood insurance take-up should remain voluntary, the offer of flood coverage would become mandatory – private insurers would have to decide whether to underwrite that risk themselves or cede a portion or the entirety of it to the pool.

As a property is de-risked through individual or community-based mitigation measures, the insurer may choose, following an annual review, to cover them as a regular property. This provides a means to exit the pool. Capitalization approaches should be structured to ensure that governments, insurers and consumers are properly incentivized to shrink the pool over time.

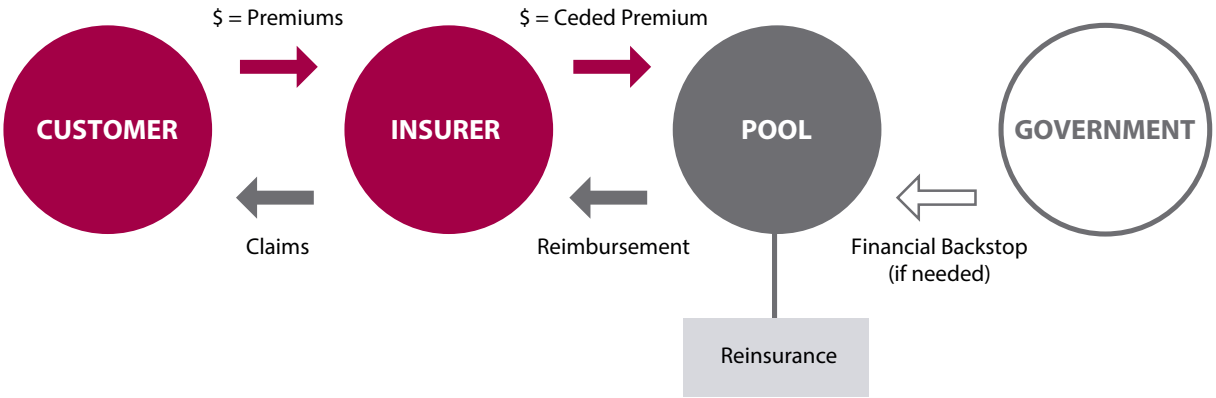
Capital and operating revenues for the pool could come principally from premiums on insurance policies, homeowner levies, government contributions, incomes from portfolio investment and re-insurance payouts. Operating expenses could come from losses and other underwriting expenses, re-insurance premiums, and operating costs. The pool could operate as a not-for-profit entity, and would thus not be subject to either provincial or federal tax. Any profit should be retained within the pool structure to increase the pool's capital base.

When a property gets flooded, the homeowner would submit the claim to the insurance company, which then would provide indemnification. At the same time, the insurer would make a cash call on the high-risk pool for its corresponding share of the claim (see Chart 1).

While premiums could be capped to ensure affordability, as much as possible they should reflect the underlying risk to reduce individual risk hazard. One solution to reach the optimum balance between price signaling and affordability could be to use declining premium subsidies funded by a levy on homeowners for a pre-determined –and well communicated - duration of time. Such a measure would make up for any financial shortfall to the scheme caused by premium limits, yet still introduce the urgency to mitigate at the individual level.

Alternatively, another solution to preserve affordability could be to maintain risk-based premiums, but offer different levels of coverage and/or deductibles, so that high-risk Canadians have access to coverage at a level of their choosing and based on what they can afford. For this solution, different products can be offered, ranging from stripped-down insurance limits to full replacement value coverage.

## Chart 1: High risk pool operational management



### CAPITALIZATION:

During the launch phase, the pool will need some form of financial support as collected premiums alone won't be sufficient to pay for incurring claims and operating costs. The scheme will need to have enough capital reserves to achieve financial viability.

Some capitalization options include:

1. Pre-capitalization could be achieved through a combination of one-time grants and long-term preferential loans from governments, as well as levies on property taxes and on the insurance industry. A budgetary line-item may be required in this case.
2. The accumulation of premiums and retained earnings could go towards capitalization, while government funding could be re-directed to pay for recurring liabilities (i.e. losses and operating expenses). No line-item would be necessary, but some form of disaster relief program may need to continue for some time after the scheme's inception.

Once full capitalization would be achieved, all governments should exit residential DFA programming. However, backstopping of the pool may still be required if ever its capital base were to erode following many cumulative flooding events and/or a lack of progress in mitigation efforts.

### EXIT STRATEGY:

The high risk pool would ramp up over a period of years until it is fully capitalized and, ideally, self-sustaining. But the pool itself should be a transitional strategy and should not be a permanent mechanism. All consumers would be able to purchase insurance at a mostly risk-based price through the pool. As risk is decreased through mitigation or as insurers' risk appetite grows through competition and risk diversification, more and more consumers should exit the pool. At some point, the pool would ideally be collapsed and a pure market system should prevail.

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The closest example to this scheme is the United Kingdom Flood Re program, which became operational in April 2016. It is a temporary plan to ease high risk regions into a risk-based pricing regime. It was designed to be in place until 2039 to provide enough time for government to adequately de-risk private properties to levels granting affordable insurance. After the transition period is complete, the expectation is for consumers to be able to purchase insurance directly from insurers at a risk-based price.

Despite the similarities between our Option III and Flood Re, there are significant differences between the Canadian and the UK context that make it difficult to simply adopting the British model wholesale. For example, in the UK, the flood insurance market is mature, having been around since the 1950s. Insurers have a lot of experience in this space and a good understanding of the underlying risk in different geographies, thanks to decades of claims history and up-to-date government-sponsored flood maps. Furthermore, the central government is responsible for both releasing building permits and providing disaster assistance, so incentives have long been aligned for responsible land plan use – quite the opposite on this side of the ocean, where federal and provincial governments responsible have little control over issuing building permits.

In terms of lessons learned, it is still early to tell whether the UK scheme is worth emulating since it has not been put to test yet. It has been in place for less than two years and no major flood has occurred since then. One takeaway from the British experience that merits some consideration is that the scheme will take quite some time to get up and running. This is potentially a drawback for its application to Canada, considering our relatively more complex government structure, federal-provincial power dynamics, and the nascent state of the flood insurance market. Furthermore, UK insurers are skeptical that governments will make the mitigation investments necessary for Flood Re to wind down by 2039.

**STRENGTHS:**

Option III's main strength is that it allows for a transition to building more climate resilient communities, while promoting risk-sharing among property owners, private insurers and all levels of government. A major caveat, though, is that its success depends entirely on a whole-of-society continuous public and private investment in mitigation, maintenance, reducing exposure, and strategic retreat disaster mitigation, including significant and sustained investments by government. It is also necessary to create a system to connect implemented adaptive measures to re-calculated risk. Without these, the pool is likely to get larger and run into solvency problems.

Another strong point of this program is that it delivers insurance payments rather than public assistance. This is an enhancement to the homeowner's experience as coverage is more comprehensive, there is less ambiguity in terms of qualifying criteria, and generally, claim payments are much quicker than under DFA programs.

A fourth point is the universality of this scheme – under Option III all Canadians, coast to coast, can be covered for flood risk, either through the private market or the high-risk pool. And finally, the scheme is compatible with embedded mechanisms to limit perverse incentives while keeping premiums affordable.

### WEAKNESSES:

There are numerous disadvantages with this option, and they are all mostly relating to its administration:

1. *Lengthy negotiation-to-implementation phase* - The setting up and operating of this scheme may take many years, as it will require an agreement between the federal government and all 10 provinces and three territories – a tall order considering that insurance is a provincially regulated industry. (Flood Re took decades between initial discussions and inception and the California Earthquake Authority took several years of heated negotiations before it was created. Considering Canada's more complex governing structure, it is safe to say that the design of the pool will not be a short-lived experience.)

2. *Administrative costs:* The administrative costs of setting up the pool and establishing a governance system scheme will be higher than running the current federal DFA program for residential flooding.

3. *Protection gap for certain citizen classes* - Questions remain unanswered regarding the treatment of some homeowner groups, such as repeat flood victims and low-income Canadians who would normally qualify for regular insurance but can't afford it. Under Flood Re there are limits on who can belong to the pool (only homes built before a cut-off date qualify) and repeat victims won't be considered. Affordability may still be an issue for vulnerable Canadians, despite the premium subsidy. An alternative solution may be needed for lower income cohorts, such as further support determined through means testing.

4. *Possible needs for recurring government assistance:* Even after full capitalization is achieved, the pool may periodically require swift government backstops in case of very large losses or a multitude of cumulative losses. While re-insurance would be used to provide additional capacity, only a portion of the pool's risk should be ceded as it remains an expensive option. A strong focus on mitigation remains the most cost-effective and the best long-term solution to address this issue.

### FIT WITH GUIDING PRINCIPLES (TABLE 4):

Option III scores high points in terms of affordability, inclusivity, and optimal compensation as it basically offers an insurance product at affordable rates to virtually all high-risk homeowners in Canada. Depending on the measure used to make insurance affordable (different coverage limits, deductibles or subsidies), premiums may be more or less efficient in reflecting risk and eliciting the right behaviours.

Similarly, because premiums do not fully reflect risk levels and coverage is easily available, policyholders may delay necessary mitigation action, especially if repeat claims are allowed to be part of the program. For these reasons, Option III gets only passing grades in terms of its efficiency.

Although designed to withstand losses and remain financially sustainability, the pool may require government to provide a capital infusion from time to time (see above), on top of on-going focus on mitigation. This is the reason for a neutral to strong mark in terms of its financial sustainability.

## Table 4: Reviewing Option 3 against Principles

| ● STRONG ● NEUTRAL ● WEAK | RISK BORNE BY | |
|---|---|---|
| **PRINCIPLES & OBJECTIVES** | **HIGH-RISK POOL (OPTION 3)** | |
| Affordability | ● | Premiums are capped and means-based tests may be used to qualify vulnerable Canadians for further support |
| Inclusivity | ● | Offered universally to high risk Canadians |
| Efficiency | ◐ | Depends on how incentives are designed from the level of subsidy to qualifying requirements, to policy limits |
| Optimal Compensation | ● | Offer more comprehensive and larger coverage than DFAs |
| Shield the Taxpayer | ● | Depends on whether overland flood insurance is bundled with homeowner insurance or sold separately |
| Financially Sustainable | ◐ | Large or several cumulative losses may imperil solvency, especially in the early stages. It requires absolute government commitment to mitigation |

## Conclusion

This study explored a range of financial solutions for residual risk properties. Clearly, stakeholders should collaborate to reduce communities' financial vulnerability in the immediate term and to provide them with enough time to lower their risk profile over the longer run so that market solutions become accessible. Any of the financial management mechanisms presented needs to be paired with necessary spending in physical risk treatment measures (e.g. mitigation, maintenance, exposure reduction, and strategic retreat) to contain, if not decrease, the number of dwellings that falls in the high-risk category in order to achieve the desired end state.

The desired end-state will reflect an overall reduction in flood risk and will foster a whole-of-society approach to building resilience. Targeted investment in climate action and disaster mitigation that includes flood risk reduction will result in fewer Canadians living in high-risk zones with better access to affordable insurance.

Therefore, the options should be considered a transitory step towards a desired end-state and should be considered within the context of a three-prong approach to climate risk:

I. Elevate consumer and local government awareness and engagement on flood risk to ensure price signals are properly received;

II. Improve and align public facing risk maps that allow insurers as well as property owners and governments to collaborate on identifying, updating and managing risk; and

III. Continue to invest in reducing the number of Canadians living in high risk to flood damage.

# Appendix I: Financial Risk of Flood Working Group Participants

## Input on this report was provided by members of a Financial Risk of Flood Working Group consisting of:

Public Safety Canada (co-chair)[5]
Craig Stewart (co-chair), Insurance Bureau of Canada
Agis Kitsikis, Swiss Re
Alain Lessard, Intact Financial Corporation
Alana Lavoie, Federation of Canadian Municipalities
Alex Kaplan, Swiss Re
Andrea Minano, University of Waterloo
Barbara Turley-McIntyre, The Co-operators Group Limited
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Daniel Hains-Cote, Province du Québec
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Paul Cutbush, Aon Benfield
Pascal Chan, Canadian Real Estate Association
Philipp Wassenberg, Munich Re
Sara Jane O'Neill, Federation of Canadian Municipalities

[5] Public Safety primarily worked to facilitate the participation of various stakeholders, and to provide strategic linkages to the other Working Group under the Advisory Council on Flooding (the working Group on Flood Data and Mapping). The views expressed in this paper do not necessarily reflect the view of the federal government.

Shawna Peddle, Partners for Action
Syzan Talo, Guy Carpenter
Thomas Börtzler, Munich Re
Trish McOrmond, Government of Alberta

## Insurance advice was provided on this report through an internal Insurance Bureau of Canada Flood Working Group comprised of:

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Amy Graham, RSA
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Diane Sullivan, TD
Francois Langevin, TD
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Kevin Smart, Aviva
Kirstie Horrocks-Cutler, CAA
Matthieu Jasmin, Desjardins
Patrice Raby, La Capitale

## The report was drafted by the policy team at the Insurance Bureau of Canada:

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Chris Rol
Javeria Niazi
Kristen Wansbrough
Lee Spencer
Craig Stewart
David McGown
Pierre Babinsky
Bernard Marchand

# Appendix II: Addressing Affordability

To address the transition point between those who can afford anything and those that can afford nothing, IBC proposes that we could apply the approach, based on the principle of residual income, used by Hudson et al. (2016)[6] in which objective (un)affordability is determined by the difference between the residual income above the poverty line (the "threshold level of income") and the expected deductible.

Because Statistics Canada does not produce a figure or has a definition of "poverty line", IBC proposes to use the federal agency's "Low-Income Cut-Offs" (LICO) concept, which defines income thresholds below which "a family will likely devote a larger share of its income on necessities of food, shelter and clothing than the average family". The approach essentially estimates an income threshold at which families are expected to spend 20 percentage points more than the average family on food, shelter and clothing. The cut-offs use Statistics Canada's Survey of Consumer Finances to produce low-income rates. They vary depending on family size (from 1 to 7 people) and area of residence (rural, small, medium, large, very large urban setting). This variability is intended to capture differences in the cost of living amongst community sizes. Depending on provincial governments' definitions and prerogatives, less stringent income thresholds than LICO could be applied.

The expected deductibles range is quite large and could vary between $500 to up to $50,000[7] or more.

$$Affordable_{j,q} = \begin{cases} 0 \; if \;\; \pi_{i,j,t} \geq Income_{j,q} - LICO - E(D_{i,j,t}) \\ 1 \; if \;\; \pi_{i,j,t} < Income_{j,q} - LICO - E(D_{i,j,t}) \end{cases}$$

**Where:** $\pi_{i,j,t}$ = *Premiums for household i, in region j, in time t*

$E(D_{i,j,t})$ = *the expected deductible*

$Income_{j,q}$ = *disposable income in the qth percentile in region j*

$LICO$ = *Low-Income Cut-Offs*

Insurance is objectively unaffordable if $Affordable_{j,q} = 0$ as insurance costs would cause a household to join the ranks of low-income households. Conversely, as long as households are able to stay above the LICO threshold, affordability becomes subjective.

[6] Paul Hudson, JW Wouter Botzen, Luc Feyen, Jeroen CJH Aerts - Incentivizing flood risk adaptation through risk based insurance premiums: Trade-offs between affordability and risk reduction, Ecological Economics, n. 125, 2016

[7] https://excaliburinsurance.ca/flood-insurance-ontario/
Or https://www.getfloodinsurance.ca/canadian-options

# Appendix III: Key Definitions

The following section provides definitions for some key concepts that will be used in the discussion of the different schemes.

## Full indemnification vs. financial relief:

Indemnification is the compensation insurance offers to the insured for a loss, in whole or in part, by payment, repair or replacement. Financial relief is a transfer payment by the government to an individual for a loss. In Canada, financial relief through provincial DFA programs varies widely. Provinces have different eligibility criteria for activating their programs and do not activate assistance programs for all events, leaving the inundated with minimal to no assistance in some cases; some provincial DFA programs are more comprehensive in what they cover, but most offer only limited protection with restrictive caps and a focus on essential property.

Furthermore, once residents are deemed entitled to financial relief, there is quite a lot of variability in terms of its amount, as assistance caps vary from a maximum of $80,000 in Nova Scotia, up to $300,000 in British Columbia, while other provinces still have no limits (Alberta, Newfoundland). These different assistance levels leave some Canadians in a better financial position post-event than others, given the strong provincial differentials in home values and rebuilding costs. For instance, Nova Scotia residents can hope to get up to a maximum of 36 cents to the dollar of what it costs to rebuild a home, while Alberta and Newfoundland & Labrador residents may be made whole post-event.

## Insurance affordability vs. affordable insurance:

Insurance ought to be affordable to be a viable option. Yet affordability is not a characteristic of insurance, rather it is a relationship between the cost of acquiring insurance (premiums, deductibles, caps) and a person's revenue. For some people any type of insurance coverage is affordable, no matter how expensive it is; for others, no insurance is affordable unless it is free.

### "AFFORDABLE" INSURANCE HAS MEANING ONLY IN THE CONTEXT OF:

1. Individual revenue
2. Level of coverage, deductibles, caps
3. Personal choice

If the cost of obtaining satisfactory insurance coverage exceeds what a household can afford, then the issue of affordability is real. Lower-income households have little discretionary spending power on how to allocate their resources to cover essential needs (food, shelter) relative to other items. For them, insurance affordability is not subjective. By contrast, higher-income households possess a discretionary budget that they can chose to allocate according to personal choice, risk appetite and awareness, and hence, for them insurance affordability may be subjective. The problem of low insurance take-up with this cohort is not tied to their inability to afford the premium, but rather to product value perceptions.

There is a threshold in the income continuum that separates households into two groups – those for whom affordability is objective and those for whom it is not. A methodology based on the principle of residual income is one amongst many that can be used to determine such threshold (see Affordability in Appendix II). Government support, if any, can focus on targeting those households for whom the issue of affordability is objective. As for the group for which insurance is subjectively "unaffordable", any kind of support would be a matter of public policy decision, though efforts should be directed to change product perceptions.

## Flood risk and who should be covered by the plan:

Flood risk can be attributed to three primary sources: Fluvial, pluvial and coastal flooding.

**FLUVIAL FLOOD** can be a result of water levels rising in lakes and rivers due to rain or extensive volumes of melted snow, or overflow of dams and channel. Fluvial risk is often predictable and can be modelled and mapped based upon flood return intervals across discrete geographies (e.g. floodplains) – this is the primary peril affecting the target population and the focus of this paper. Insurance for homeowners in these risky areas is either unaffordable or not available and is likely to remain so in absence of mitigating measures that can bring it to insurable levels (this may involve their physical removal to a safer setting).

**PLUVIAL, OR SURFACE WATER FLOOD**, is caused when heavy rainfall creates a flood event independent of an overflowing water body. There are two common types of pluvial flooding: 1) Intense rain saturates and overwhelms an urban drainage system so that the water flows out into streets and nearby structures (often through the sewage system causing sewer back-up); 2) Run-off or flowing water from rain falling on hillsides that are unable to absorb the water. Hillsides with recent forest fires are common sources of pluvial floods, as are suburban communities on hillsides. Pluvial flooding can happen in any urban area — even higher elevation areas that lie above coastal and river floodplains. As a consequence, pluvial risk is less predictable and can affect anyone. Insurance for sewer back-up is widely available and typically offered as an optional endorsement to homeowner insurance. Flood coverage available in many areas for this type of flooding.

**COASTAL, OR SURGE FLOOD** is produced when high winds from hurricanes and other storms push water onshore — is the leading cause of coastal flooding and often the greatest threat associated with a tropical storm. In this type of flood, water overwhelms low-lying land and often causes devastating loss of life and property. Coastal risk can be modelled and predicted. Because insurance for this peril is in its infancy and thus still very limited, Canadians living along coastal areas may be considered in the plan.

## Policy limits (caps) and deductibles:

Insurance limits are the maximum amount of money an insurance company will pay for a covered loss. Generally, the higher the coverage limit, the higher the premium. If limits are in place, one may still be eligible to acquire disaster financial assistance. For example, in some provinces, flood insurance policies may have a cap of $30,000. Insurance evaluators will come and assess the DFA eligible losses and their associated compensation. The DFA payment will be total DFA-eligible losses less the amount payable by insurance.

The deductible portion of an insurance claim is an amount that a policyholder agrees to pay, per claim, toward the total amount of an insured loss. The damage associated with the deductible is still considered insurable damage and therefore not eligible for DFA.

## High-risk pool:

A high-risk pool takes the risk facing individuals and transfers it to a larger group. It is a vehicle that can be used to effectively transfer individual risks to the entire group. Each member of the group pays a relatively small insurance premium, which corresponds to a small but certain loss of income, but in so doing the risk of incurring a larger loss is avoided. While the risk facing one specific person is largely unknowable, the risk for a larger group can be calculated with a great deal of certainty.

## Reinsurance:

In lay terms, a reinsurer is the insurer of a primary insurer. By covering the insurer against accumulated individual commitments, reinsurance gives the insurer more security for its equity and solvency and more stable results when catastrophic floods occur. Insurers may underwrite policies covering a larger quantity or volume of risks without excessively raising administrative costs to cover their solvency margins. In addition, reinsurance makes substantial liquid assets available to insurers in case of exceptional losses.

The main advantage offered by insurance and reinsurance is that they allow for the partial or full risk transfer to the private sector, while reducing the volatility of disaster assistance payments. Taking care of flood risk in an increasingly wetter climate becomes more predictable and sustainable.

The risk of under- or over-protection from flood contingent liability is inherent in any of these options. Good planning and forecasting may be required prior to considering any of them. Given the evolving nature of the risk, the solutions should be continually reevaluated. Future scenario modelling is fundamental to any mid-range risk assessment.

The government's tendering process of selecting an insurer or reinsurer may be adding complexity to choosing risk transferring to the private sector. Premiums may be structured to incent de-risking by local governments, including investments in mitigation infrastructure and limiting building permits in flood zones.

## Mitigation:

The purpose of mitigation is to lower the contingent liability profile of residual risk properties to acceptable levels so that insurance becomes affordable and available. Mitigation can be implemented both at the level of the individual homeowner (e.g. sump pumps, terrain grading, etc.) and local government (larger infrastructure investment, i.e. water reservoirs, dykes, berths, and natural infrastructure, such as wetlands, reforestation, ponds, etc.).

In severe cases, collaborative mitigation may not be sufficient and strategic retreats may be the only option to reduce risk.

# Appendix IV: Reviewing Strategic Retreat - A public policy option to reduce disaster costs

Since the 1980s, the frequency of climate-related disasters, such as floods and storms, has increased significantly around the globe. According to Impacts, Adaptation and Vulnerability by the Intergovernmental Panel on Climate Change Working Group II, enhancing resilience is equivalent to reducing the risk of climate change impacts on society.

Resilience can be strengthened by decreasing the probability of a hazard occurring through managed retreat, avoiding or reducing its potential effects, and facilitating recovery from damages when impacts occur. Managed retreats and property buyouts, which are popular types of strategic retreat, have gained prominence in the last two decades as part of mitigation policies in some countries (the Netherlands and the United States, for example). By making strategic retreat part of the entire gamut of strategies it can lead to improvements in communities' flood resilience.

Though rarely used, this policy option has been considered in Canada in some cases. The following is a list of examples of strategic retreat seen in Canada:

## Breezy Point, Manitoba

Due to repetitive flooding in the northern part of Breezy Point, Manitoba, in 2009, the provincial government decided to terminate the leases on the Crown land and remove residences from the flood-prone properties. The Manitoba government declared that frequent flooding of the settlement posed a risk to the lives of the residents as well as any rescuers required to come to the aid of people in the area. The government gave residents time to voluntarily terminate their leases and move out before facing forced eviction. It offered buyouts to permanent residents but not to the cottage holders in the area.

## Perth-Andover, New Brunswick

In 2012, the New Brunswick government announced that it would spend $8 million to move or flood-proof homes destroyed or damaged by flooding in Perth-Andover, a village at high risk of repeat flooding. The residents were given the choice of relocating to higher ground or staying and having their homes flood-proofed. Notably, although homes were moved, businesses were not and this was controversial locally.

## High River, Alberta

The Town of High River, Alberta, is located at the critical choke point of the Highwood River, and the Wallaceville neighbourhood was at very high risk of flooding. In 2013, the town offered mandatory buyouts to Wallaceville residents, based on its 2013 property assessments. The houses and deep infrastructure were cleared and the area is currently being naturalized to make room for the river. This naturalization has also reduced the risk for other High River communities' downstream in future high flow events.

## Conclusion

When considering strategic retreat options, governments need to decide whether the program should be mandatory or voluntary. When governments make the program mandatory, there is often a push-back by property owners wishing to stay. Municipal governments are particularly susceptible to pressure from homeowners who want to remain in their homes. When developing a strategic retreat policy, governments need to take into account the emotional attachment that individuals have to their homes and properties.

Strategic retreats in the form of buyouts have been successfully used as part of mitigation strategies in other countries and, despite early implementation challenges in Canada, they are a viable option; and should be part of the mitigation policy. Buyouts are especially suitable for properties facing repeat losses. One noteworthy feature of a Canadian voluntary buyout program is that homeowners who choose to stay in the high-risk areas are not eligible to make future claims from government disaster assistance programs.

# Appendix V: A Whole-of-Society Response to Climate Change and Increasing Flood Risk

In order for any plan for the financial management of flood risk to succeed there needs to be a broader commitment to reducing the impacts of our changing climate on Canadian communities. Because the paper is focused on the financial management of flood risk, there has not been any real examination of the other factors necessary for the long-term success of any financial management plan. The importance of climate adaptation was borne out in the Vancouver Declaration on Clean Growth and Climate Change and through the subsequent development of the Pan-Canadian Framework.

Adaptation and the mitigation of risk must accompany any of the financial management options being considered. Climate change will change the flood risk profile in many parts of the country, and without an ongoing commitment to address that risk flood related damages will be more common and more severe in communities across Canada. Some of that risk can and should be borne by property owners, but federal and provincial governments have a sizable role to play in improving education, flood risk assessment, funding for mitigation, and setting standards for future development.

According to IBC, these priorities should be undertaken alongside the development of that solution to ensure that Canada develops a strong flood risk management culture alongside a mechanism for the financial management of flood risk:

**a** Prioritize and invest in resilient infrastructure to help communities adapt to emerging climate realities. Infrastructure decisions should be made through a climate adaptation lens that includes recognizing the important role of natural infrastructure in reducing climate change impacts.

- Ongoing mitigation investments by all levels of government will be needed to address current vulnerabilities and to offset future climate related impacts. The federal government has allocated $2 billion for a Disaster Mitigation and Adaptation Fund[8] and made another $5 billion eligible over the next five years for green infrastructure projects.[9] This cannot be a one-time funding envelope and ongoing funding will be required as a prerequisite for a successful financial management of risk solution.
- Flood risk can also be reduced by assessing the value of and incorporating innovative infrastructure options (i.e. natural infrastructure) into community infrastructure planning and decision-making.

[8] Canada Federal Budget 2017, p.122
[9] Ibid, p115

**b** Update and Improve Canadian Risk Maps.

- A key outcome of the 2017 National Roundtable on Flood Risk was identifying the need to explore mechanisms for sharing up-to-date flood data and flood maps to better understand the risks and to predict future risks. Although each community will be impacted in different ways by climate change, water is a hazard most will need to address. Many communities and property owners still lack the ability to assess their risk – much less mitigate it. Developing strong tools and better data can enhance our capacity for preparedness, response and recovery.

**c** Educate, engage and incent home and business owners to mitigate their risks at the property level.

- The National Roundtable on Flood Risk also identified the need to better engage with Canadians to communicate the changing nature of flood risk. Although there is a clear role for government here, there are many other actors that are committed to similar goals. There are extensive opportunities for all stakeholders to collaborate to advance the public's understanding of flood risk.

**d** Update building codes and standards to improve climate and disaster resilience objectives, and improve land use planning.

- Canada's population will continue to grow in coming years and we will see growth both in existing communities and the emergence of new communities. On a practical level this means that we will have the opportunity to do better going forward and ensure that new homes and new communities are more resilient. The National Research Council is leading an effort to update codes and standards to improve resiliency. When these new standards are developed, fast-tracking them into building codes will help protect Canadians against flood and other climate related impacts. A significant part of flood risk can also be avoided by making smart land-use planning decisions, and there is a clear role for governments in setting smart development rules.

The options being considered for the financial management of flood risk deal with only one component of the problem, and that is the risk that we have not mitigated. These options address existing risk in places where, in hindsight, we ought not to have built residential communities. The options do not address new risks or worsening of existing risk. Unless that risk is addressed through ongoing investments, more properties will find themselves at risk and these financial management options will not provide a sustainable solution. It is imperative that governments recognize the ongoing responsibility they have to invest in ongoing mitigation and making communities more resilient if they want a sustainable financial management solution for flood.

# Appendix VI: International Flood Insurance Programs

| COUNTRY/ CATEGORY | AUSTRALIA | USA | NETHERLANDS | UK |
|---|---|---|---|---|
| Basis and Evolution of Approach | • Relocation plays a part<br>• Risk based pricing | • The National Flood Insurance Programme<br>• Relocation plays a part | • No private insurance for river or sea flooding<br>• Relocation " Room for the River" program | • Private insurance against flood risk damage is bundled with general insurance |
| Private Role | • Primary Insurer | • Administrator | • None | • Administrator |
| Public Role | • Provides a standardized flood definition | • Primary Insurer and Regulator | • None | • Primary Insurer and Regulator |
| Implementation/ Scheme | • Flood insurance is risk reflective. Calculated based on level of risk at a property, cost of rebuilding or repairing the property<br>• Calculating a flood premium by: Likelihood of flooding; Expected depth of flooding relative to the insured building; and Expected cost of recovery.<br>• Local governments are responsible for producing their own plans and building their own defences | • Covered up to $250,000<br>• All home owners with a 1% risk or higher annual chance of flood with a mortgage from federally regulated or insured lenders are required to have flood insurance<br>• HUD provides disaster recovery resources for the lenders<br>• Local governments have to restrict development in 1/100yr flood zones or have to be elevated if not protected by a levee | • Private ex ante, premium optional<br>• Government ex post compensation<br>• Insurance for surface water flooding is bundled with standard insurance | • Flood Re<br>• Private, ex ante, premium bundled<br>• Private sector flood insurance is included as standard with contents and building coverage<br>• Basic structural flood insurance is a pre-requisite for a mortgage<br>• Central government is about policy; Implementation is the responsibility of others |
| Highest Risk | • Priced based on risk | • Included | • Included | • Flood Re |
| Cost of Insurance for Policy Holders | • Average Flood insurance premium in Queensland by Allianz is $8200 (2013) | • Avg. cost is $700 per plan (costs vary depending on level of protection and risk) | • Post-disaster relief fund used as primary compensation for property-owners | • Insurance excess for flood cover is now £250 (standard deductible)<br>• Average household pays £176 in building insurance every year |
| Link B/t Insurance and Risk Reduction | • TBD | • Premium/deductible / indemnity limit<br>• Awareness raising/client consulting | • None | • None |
| Coverage Rates | • 93% of home building and contents policies contain flood cover | • Uptake is 75% of those legally required to have coverage | • Very low | • 95% |

# Appendix VII: Flood Re as an option for Financial Management of Flood for High Risk Properties in Canada

## Introduction

Flood Re is an agreement between insurers and the government in the U.K. that updates previous agreements. Flood Re, which became operational in April 2016 after the previous agreement expired, addresses the financial management of flood risk for high-risk properties and could serve as a potential model for a Canadian program. However, to implement a similar program in Canada, the model would have to be changed significantly because of the many differences between the two countries.

## How Flood Re works

### STRUCTURE

Flood Re is a reinsurance pool in the U.K. for flood insurance for residential and small commercial properties at the highest level of risk. The pool is used to pay insurers for claims they pay out. The reinsurance pool was established to ease the transition to full risk-based pricing of insurance over the course of 20 to 25 years. Gradual increases in premiums and improved risk mitigation will make it possible for private insurers to offer risk-based coverage by the end of that time period.

Below are some internal aspects of Flood Re.

- Of the properties in the U.K. that are insured against flooding, it is estimated that 350,000 properties will benefit from Flood Re coverage. It will take a few years of Flood Re being operational before an accurate number is available.
- Consumers purchase insurance from their insurers and submit claims directly to them.
- Insurers choose whether the flood risk portion of a policy is ceded into the Flood Re pool.
- If claims following a flood event exceed Flood Re's reserves, Flood Re can impose "Levy 2" which calls on insurers for additional funding.
- There is no formal public backup mechanism.

- The government has no role in the scheme's day-to-day management.
- The government has provided insurers with a non-binding "letter of comfort," acknowledging that the government will provide flood risk mitigation investments and developing policies to help manage flood risk.
- Insurance is sold in a competitive marketplace in the U.K. This means that insurers have the discretion to price policies (not Flood Re) as they choose and customers have the freedom to do business with whatever company they choose.

### ADMINISTRATION COSTS

Costs of running the Flood Re system include underwriting, administration, ongoing mitigation and levy collection expenses. Specific costs include:

- Underwriting the separate pool liability for Flood Re: £16 million–£49 million per year ($27,590,720–$84,496,580 CAD)
- Setting up the pool: £8 million–£12 million ($13,799,480–$20,693,040 CAD)
- Running the pool: £6 million–£10 million per year ($10,346,520–$17,244,650 CAD)
- Collecting levies: £1 million per year ($1,724,812 CAD)

### FUNDING STRUCTURE

Funding to cover Flood Re's costs comes from three sources:

1. A levy paid by insurers, which is based on their market share (known as Levy 1)
2. Ad hoc payments by insurers (known as Levy 2), used under extraordinary circumstances
3. Premiums for the properties ceded to the Flood Re pool.

Flood Re's Levy 1 maintains the cross-subsidization that existed under the previous insurance schemes in the U.K. For properties at low to no risk of flooding, the cross-subsidy is not anticipated to increase costs to consumers. The annual market-share levy amounts to £10.50 ($18.11 CAD) per policy. Levy 1 is paid by all insurers that underwrite policies for household buildings and contents, which totals £180 million ($302,691,212 CAD) per year. Insurers will pay the levy each year for the first five years of the scheme. If the pool needs to be topped up due to Flood Re's reserves being exceeded due to post-flood claims, this can be done through the ad hoc, or Levy 2, payment system. All insurers that pay the market-share levy must also make any required ad hoc payments to the Flood Re administrator.

The third source of income for Flood Re is the premiums (a fixed amount per ceded policy) that Flood Re charges insurers. These premiums are calculated based on Council Tax bands. Insurers choose whether to recover the cost of these premiums from consumers. However, Flood Re was designed on the principle that properties located in bands in which people pay lower taxes should be assessed lower premiums to promote affordability.

### PREMIUMS PAID BY INSURERS

Flood Re assesses premiums for the ceded flood risk portions of policies for high-risk properties using a tier system in which insurers ceding expensive homes pay a higher premium than insurers who cede less expensive homes. According to the 2016 Financial Management of Flood Risk report published by the Organisation for Economic Co-operation and Development, Flood Re premiums for the lower-income households are indirectly subsidized through the pricing of reinsurance for the flood portion of bundled household policies. Flood Re then provides standard prices for reinsurance coverage for properties in Council Tax bands in which the level of flood risk is irrelevant. While insurers are free to set the premiums for bundled coverage, the set price of the flood risk portion that insurers transfer to Flood Re provides a notional ceiling on the premiums for high-risk properties.

Every five years, Flood Re will review the premiums and Levy 1. Flood Re's scheme is designed to increase premium thresholds to align them with the Consumer Price Index at the start of every financial year, but any changes to the premiums require the approval of the Secretary of State. The fixed premium scale currently ranges from £210 to £540 ($362–$931 CAD), depending on the Council Tax band classification in which the property is located.

## Disadvantages of the Flood Re system

Flood Re is a temporary plan to ease the transition to a risk-based pricing regime. It was designed to be in place until 2039. After the transition is complete, consumers will purchase insurance directly from insurers at a risk-based price. If the government, through mitigation efforts, does not reduce the overall level of risk over the course of the time that Flood Re is operational, the government and insurers will once again have to tackle affordability in the context of a mandatory insurance regime. If the risk is not addressed and lowered, then the Flood Re system that is used to transition to a risk-based system will have failed. If the transition toward risk-based pricing is successful, flood insurance will still be unaffordable for a small number of homeowners. Some form of support will need to continue beyond 2039.

As flood-related financial losses rise globally, and climate change continues to represent additional risk, it is important that the underlying flood risk be addressed through mitigation measures by both governments and individuals. If this risk isn't addressed, the Flood Re system may not work according to plan. The pool may increase in size, the windup of the pool could be delayed or the risk-based price of insurance for high-risk properties could be prohibitively expensive when the pool winds up. There is no guarantee that future governments will invest in flood mitigation, and there is concern that the current government's commitment to appropriate mitigation measures is waning. The government has already proposed cuts to the budget for additional flood defences.

While Flood Re remains in place, governments and individuals may forgo the necessary mitigation simply because there is a financial management scheme in place. Moral hazard is a risk any time the true cost of risk is hidden. Flood Re measures affordability strictly on the basis of property value and does not include metrics such as those that assess exposure, vulnerability and risk, which can better reflect vulnerability to flood damage.

## Comparing flood insurance in Canada and the U.K.

| UK | CANADA |
|---|---|
| Home insurance is mandatory, but flood insurance is voluntary and often bundled with home insurance. | Home insurance is voluntary, and flood coverage is optional. |
| Cross-subsidization, and the attendant moral hazard, is a feature of the insurance market. | Private insurance market is risk based. |
| The premiums that insurers pay to Flood Re are assessed through a Council Tax band system. | Canada would need to group properties using property assessment data or another mechanism to assess risk and flood vulnerability. |
| Flood insurance being offered since the 1950s, and Flood Re is only the most recent financial management scheme for flood risk. | Insurers started to offer residential overland flood insurance in 2015. |
| The federal government in the U.K. has more control over flood mitigation decision-making. | Canadian provinces and territories (and municipalities) are responsible for land-use planning decisions and flood mitigation spending. |
| Government gives a letter of comfort regarding ongoing mitigation and flood risk management, there is no guarantee that this mitigation will take place. | It would be difficult to bind future governments to this type of agreement. |

## Conclusion

While insurers and the government in the U.K. have come to an agreement in establishing the Flood Re pool, it is a tailored arrangement that works for circumstances specific to the U.K. While a reinsurance pool may be an attractive option for managing the financial risks associated with flooding in Canada, there are sufficient differences between the U.K. and Canada to make the adoption of the Flood Re model in Canada difficult.

# Appendix VIII: Comparing Disaster Assistance Approaches across Canada

| PROVINCE/ TERRITORY | DISASTER ASSISTANCE CLAIM ELIGIBILITY | SPECIAL NOTES IN THE PROGRAM | AVERAGE CONSTRUCTION COST (PROVINCE) | AVERAGE CONSTRUCTION COST (METROPOLITAN) | MAXIMUM COMPENSATION RATIO (PROVINCE) | MAXIMUM COMPENSATION RATIO (METROPOLITAN) |
|---|---|---|---|---|---|---|
| Alberta | Up to 90% (maximum limit is not mentioned)[10]<br>Item limits are basic models | | 250,000 | 320,000 | 0.90 | 0.90 |
| British Columbia | 80% of eligible damage to maximum payment of $300,000<br>https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/dfa/private_sector_guidelines.pdf<br>Item limits are basic models | In British Columbia, to be eligible for disaster financial assistance it must be from a peril that is not insurable. As insurable damages from wind, wildfires, earthquakes, SBU or sump pit back-up and water entry from above ground sources such as roofs and windows are not eligible[11]. | 300,000 | 380,000 | 0.80 | 0.79 |
| Manitoba | 80% of eligible damage up to a maximum payment of $240,000<br>https://www.gov.mb.ca/emo/recover/home/dfa_home.html<br>Item limits-basic models | Ineligible costs include[12]:<br>- Insurable losses<br>- Damaged items or property that could have been insured at an available and reasonable rate are not eligible<br>- Insurable hazards such as SBU or sump pump back-up, snow load and wind damage are also not eligible. | 220,000 | 230,000 | 0.80 | 0.80 |
| New Brunswick | 100% of eligible damage, to a maximum payment of $160,000[13]<br>Item limits-basic models | | 190,000 | 210,000 | 0.63 | 0.57 |
| Newfoundland and Labrador | Limits to be confirmed | | 250,000 | 250,000 | 1.0 | 1.0 |
| Northwest Territories | 80% of eligible damage, maximum payment of $100,000 | | 220,000 | 230,000 | 0.45 | 0.43 |
| Nova Scotia | 100% of eligible damage, maximum payment of $80,000[14]<br>Item limits-basic models | | 210,000 | 220,000 | 0.38 | 0.36 |

[10] http://www.aema.alberta.ca/documents/DAG-2017.pdf
[11] Government of British Columbia. (2018). Disaster Financial Assistance. Retrieved from: https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/emergency-response-and-recovery/disaster-financial-assistance
[12] Government of Manitoba. (2018). Disaster Financial Assistance. Retrieved from: https://www.gov.mb.ca/emo/recover/home/dfa_home.html
[13] https://www2.gnb.ca/content/gnb/en/news/public_alerts/report_damages/2018_flood.html
[14] https://novascotia.ca/dma/emo/disaster_financial_assistance/program_limits.asp

| PROVINCE/ TERRITORY | DISASTER ASSISTANCE CLAIM ELIGIBILITY | SPECIAL NOTES IN THE PROGRAM | AVERAGE CONSTRUCTION COST (PROVINCE) | AVERAGE CONSTRUCTION COST (METROPOLITAN) | MAXIMUM COMPENSATION RATIO (PROVINCE) | MAXIMUM COMPENSATION RATIO (METROPOLITAN) |
|---|---|---|---|---|---|---|
| Nunavut | Not specified | | 130,000 | 130,000 | | |
| Ontario | 90% eligible damage to a maximum payment of $250,000[15]<br>Item limits-basic models | Damage from sewer back up is only covered if you are a person from a low-income household[16] | 240,000 | 300,000 | 0.90 | 0.83 |
| Prince Edward Island | Not specified | | 210,000 | 210,000 | | |
| Quebec | 90% of eligible damage, maximum payment of $200 000[17]. The maximum will be indexed annually based on CPI for Quebec beginning on March 1st 2019, with the increase capped at $5 000 per year.<br>Item limits-basic models | | 270,000 | 300,000 | 0.74 | 0.67 |
| Saskatchewan | 95% eligible damage, maximum payment of $240,000[18]<br>Item limits-basic models | | 240,000 | 270,000 | 0.95 | 0.89 |
| Yukon | Not specified | | 230,000 | 230,000 | | |
| Canada | 190,000 | Eligible costs to a province are net costs after any recoveries from insurance payouts.<br><br>Costs of restoring or replacing items that were insured or insurable are not eligible. | 250,000 | | 0.76 | |

[15] http://www.mah.gov.on.ca/Page13744.aspx
[16] Government of Ontario. (2018). Provisions for low-income households. Retrieved from: http://www.mah.gov.on.ca/Page13754.aspx
[17] https://www.securitepublique.gouv.qc.ca/fileadmin/Documents/securite_civile/aidefinanciere_sinistres/programmes/Decret_459-2018_programme_general_du_28_mars_2018.pdf
[18] http://publications.gov.sk.ca/documents/313/106696-PDAP-Claim-Guidelines.pdf

Source: Floodsmart Canada, IBC Flood maps[19]

Calculations: $$\textit{Maximum Compensation Ratio} = \frac{\textit{Maximum Provincial Payment}}{\textit{(Average Construction Cost x Provincial Eligible Damage)}}$$

[20] Flood Smart Canada. (2018). FLOOD INSURANCE & DISASTER ASSISTANCE: Understanding the differences in order to better serve your flood-related needs. Retrieved from: http://floodsmartcanada.ca/flood-insurance-disaster-assistance/#collapse10

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# The financial management of flood risk

An international review: Lessons learned from flood management programs in G8 countries

# About Insurance Bureau of Canada

Established in 1964, Insurance Bureau of Canada (IBC) is the national industry association representing the Canadian private property and casualty (P&C) insurance industry. Our members account for more than 90% by premium volume of private auto, home and commercial insurance sold in Canada.

The P&C insurance industry employs more than 118, 000 Canadians, pays $6.7 billion in taxes and levies to the federal, provincial and municipal governments, and has a total premium base of $48 billion, approximately half of which is derived from automobile insurance.

IBC's role is to be active on behalf of its members. IBC does this by:

- Leading on issues of national importance to its members and all Canadians;
- Forecasting and responding to issues that arise in the industry;
- Anticipating opportunities to identify, shape and influence change in support of members' business needs; and
- Lobbying the federal and provincial governments to secure changes in public policy and in the business-operating environment that will benefit insurance companies and their customers.

IBC works on a number of fronts to increase public understanding of home, auto and business insurance. It also fosters public understanding through its five regional consumer centres, where trained personnel with many years of industry and government relations experience answer tens of thousands of consumer inquiries each year.

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# Executive Summary

The purpose of this paper is to examine best practices and available models for managing the financial impact of floods. The paper (i) identifies key issues specific to flood risk management, (ii) evaluates international experience with public and private flood insurance programs, and (iii) draws out lessons for Canada's approach to the financial management of flood risk and the role of insurance.

Although the market is now starting to change, residential coverage for overland flooding has historically not been available in Canada. There are three key reasons explaining this fact.

First, flood risk does not lend itself to the economics of insurance. It inherently leads to adverse selection, which, in turn, hinders the basic insurance principle of diversification through risk pooling. As a result, flood insurance is hard to offer and, when available, it is naturally expensive.

Second, flood-related losses are often directly attributable to under-investment in public infrastructure, poor asset management, obsolete building codes and ineffective land-use planning. Unless governments fulfil their obligations to improve risk planning and mitigation, the widespread availability of residential flood insurance may remain commercially unviable.

Third, Canada lacks effective flood hazard maps, which are an essential risk-assessment tool. Insofar as the risk of flood cannot be adequately assessed, the financial management of this risk remains a challenge. Recent large-scale flooding has provided insurers with helpful flood risk information, but mapping allows for the assessment of risk prior to flooding occurring.

The limited insurability of flood risk, in turn, means that taxpayers are bearing a significant burden for flood damage across the country, as is evident by examining spending on the Disaster Financial Assistance Arrangements (DFAA) program. Since the 1970s, federal payments for flood assistance have totalled $6.2 billion – or 70% to 80% of total DFAA spending. These costs have more than quadrupled in 40 years, swelling from a cumulative $300 million in the 1970s, to $1.2 billion in the 2000s, to a staggering $3.7 billion in the first four years of this decade. While the recent restructuring of the DFAA has devolved more of these costs to provincial tiers of government, taxpayers still remain the ultimate funding source for flood loss compensation.

Despite the long-standing exclusion of overland flooding, insurers have often ended up paying for flood-related damage in the event of a major flood.

Payouts from extreme weather have more than doubled every five to 10 years since the 1980s. For each of the past six years, these payouts have been close to or above $1 billion in Canada. In 2012, losses hit $1.2 billion. In 2013, losses were a historic $3.4 billion, due to floods in Alberta and Toronto. In 2014, losses again approached $1 billion. By comparison, insured losses averaged $400 million a year over the 25-year period from 1983 to 2008. Water claims have become the number 1 cause of home insurance losses across the country.

IBC's examination of the flood management programs in G8 countries offers insights into solutions that may be applicable in Canada.

Every country has had to wrestle with the same issues. The approaches that have been developed span along a continuum that ranges from insurance-based to government relief solutions, including approaches that are fully private, fully public or in between.

Although none of these countries offer a template readily transferable to Canada, IBC has identified several best practices and lessons learned that can guide the financial management of flood risk here at home.

Whether residential flood insurance will ever become commercially viable in Canada, the international experience clearly points to four preconditions that are essential to establishing a strong flood risk management culture.

1. There must be accurate and up-to-date flood hazard mapping to allow all tiers of government – as well as insurers, developers and other key private-sector stakeholders – to make smart decisions about asset management, urban planning and flood risk management;
2. There must be ongoing and adequate investment in flood defences, and sewer and stormwater infrastructure;
3. There must be widespread awareness of flood risk and a sound understanding by all stakeholders – including governments, communities and individuals – of the physical and financial consequences of flood risk and the tools available to ensure Canadians are prepared; and
4. There must be limited recourse to government revenue to finance post-disaster compensation so that individuals face effective risk-mitigation incentives, and the financial burden on taxpayers is minimized.

In the recent past, individual insurers have started taking steps to address this coverage gap, but it remains clear that, as an industry and as a country, a more comprehensive and institutionalized solution is needed to tackle the pressing challenges faced by high-risk properties.

Consequently, IBC welcomes the federal government's commitment to work with the industry to develop a national approach to flood insurance. The approach, from the industry's perspective, will need to address the preconditions listed above, and identify clear roles and responsibilities for all of the stakeholders.

# Introduction

It is now widely established that the weather around the globe is changing, and Canada is feeling the effects of this trend first-hand.

Over the past 60 years, average temperatures in Canada have increased by more than 1.3°C – about twice the global average. During the same time period, the weather has also become wetter, with an average 12% increase in rainfall across the country. As a result, Canadians now cope with an additional 20 days of rain per year, compared to the 1950s. It is projected that for some regions in Canada, storms that used to strike every 40 years will occur every six years by 2050.[1]

The wetter, warmer environment has led to more violent, extreme weather patterns, including storms and floods. Over the past two decades, storms and floods have increased in frequency by a factor of 20, making overland flooding the most frequently occurring natural disaster that affects the most people worldwide. Between 1900 and 2012, there were 289 significant floods in Canada – the equivalent of more than two major floods every year – representing almost 40% of all natural disasters ever recorded in Canada. This means floods occur more than twice as often as the next most-common disaster.[2]

The changing weather, in turn, generates growing economic losses for Canadian families and governments. While the availability of insurance for water damage in Canada is limited, insurers are already shouldering much of the associated losses.

For six years in a row, Canadian P&C insurers have suffered losses of close to or at $1 billion every year. In 2013, that figure reached $3.4 billion.[3] Water-related damage caused the majority of these insured catastrophic losses, and was compounded by aging sewer and stormwater infrastructure that is increasingly unable to handle today's increased volume of precipitation. As a result, water damage has now surpassed fire as the number 1 cause of home insurance loss across the country.

The purpose of this paper is to examine best practices and available models for managing the financial impact of floods. The paper (i) identifies key issues specific to flood risk management, (ii) evaluates international experience with public and private flood-insurance programs, and (iii) draws out lessons for Canada's approach to the financial management of flood risk and the role of insurance.

***Editorial Note***

At the time of publishing, the G8 group of countries has effectively become the G7+1 due to the suspension of Russia from its membership.

Because most of the literature that IBC reviewed to prepare this report and the cited references refer to the G8, and solely for the purpose of maintaining clarity and consistency in our literature review, we continue to refer to this group as the G8 group of countries.

# Issues with the Financial Management of Flood Risk

Of all natural disasters, floods are the most frequent, affect the most people worldwide and cause the largest number of fatalities and the largest economic losses.[4] Moreover, because of the challenge in insuring flood risk and the low rate of flood insurance take-up (even in countries where a national flood program does exist), most of these economic losses remain uninsured and, hence, are absorbed by governments and taxpayers.

The financial management of flood risk is increasingly problematic due to the combination of several trends: the growth in population and asset values, the concentration of urban and industrial development in flood-prone areas, the onset of more violent weather patterns, and the increase in the vulnerability of private structures and public infrastructure due to obsolete building codes and under-investment in risk mitigation measures. Taken together, these trends make adaptation to flood risk a priority.

## What Insurers Mean by "Flood"

In Canada, there is no unequivocal definition of overland "flood," and the term is often used somewhat liberally. In principle, floods are best categorized based on their (a) causes and (b) locations.

### There are five main underlying hazards that can generate overland floods:

**Spring snow-melt runoff** – the melting of the accumulated winter snowpack

**Storm rainfall** – localized, extreme rainfall that can generate, especially when combined with impervious soil and/or inadequate draining infrastructure, extreme stormwater runoff

**Tidal flooding** – a combination of low-pressure weather systems and peak high tides can raise water levels in rivers, lakes and oceans to the point where water defences are breached

**Natural dam failure** – the sudden release of water flow resulting from the failure of temporary natural dams caused by ice buildup (i.e., ice jams), landslides, moraines and glaciers

**Structural failure** – the sudden release of water flow resulting from the failure of man-made engineered flood defences and water control infrastructure (e.g., dams, levees, dikes)

### There are three main types of floods based on location:

**Fluvial (i.e., riverine) flooding** – occurring when, in the flood plains of a river, a combination of the causes noted above result in the capacity of watercourses being exceeded, with consequential river overflow

**Urban (i.e., pluvial) flooding** – occurring when, in an urban centre, surface and underground infrastructure is unable to drain excess water flow generated by a combination of spring snow-melt runoff and stormwater runoff

**Coastal flooding (i.e., storm surge)** – generated by the combined action of wind, waves and high tides – including the effect of tsunamis – along the coast of large lakes and oceans

## Compensation through insurance

In Canada, while there is insurance to cover water-related damage, comprehensive residential coverage for overland flooding is not yet available across the country and for all water-related risks.

Insurers provide residential coverage by endorsement for damages caused by sewer backup (in Quebec, the endorsement coverage also includes seepage and rising of the water table). Moreover, overland flooding is covered through automobile insurance as well as through commercial property policies.

As a result, although flood is typically not covered under residential insurance, insurers often end up paying for a significant portion of associated losses. The reason for this is twofold.

First, often two different perils – one covered by the policy (e.g., sewer backup) and one excluded from coverage (e.g., overland flooding) – can act together to cause damage or loss. In these cases, it has been difficult to ascertain to what extent the resulting losses were caused by the (un)insured peril, leading insurers to compensate damages that would not have otherwise been covered under the policy.

Second, in the event of a major flood or other natural disaster, it is not uncommon for insurers to lift certain policy exclusions and offer policyholders ex-gratia compensation, above what would be required by the insurance contract, to avoid reputational damage and potential political pressures.

The flood events of 2013 have made these challenges apparent, and insurers have since taken steps to further clarify the distinction between the types of water damage that are and aren't covered by a homeowner's policy.

Despite this, losses suffered by homeowners from overland flooding are not, technically, deemed insurable for several reasons.

The key issue is that, unlike most other perils, flooding does not lend itself to the economics of insurance. Insurance, by its very nature, works well for random, uncertain risks that are not correlated. Flood risk is the opposite: it is easily predictable because the same properties on the same floodplain tend to flood at periodic, recurrent intervals. And when it happens, flooding affects a large pool of properties at the same time.

This, in turn, has three negative consequences.

First, predictability leads to adverse selection, meaning that only high-risk individuals, knowing that they are likely to suffer flood losses, will seek out insurance. As a result, the basic insurance principle of diversification through risk pooling no longer applies. Moreover, frequent repeat claims affecting a large portion of the pool would occur, which would necessarily lead to high – often unaffordable or non-commercially-viable – premiums.

In other words, flood insurance is hard to offer and, when it is available, it is naturally expensive and only purchased by a few individuals.[5] Under these circumstances, insurers can only choose between charging actuarially sound but unaffordable premiums, or not offering flood coverage at all.[6]

Second, a significant portion of flood-related losses is directly attributable to under-investment in public infrastructure, poor asset management plans, obsolete building codes and ineffective land use planning. Unless governments address these basic issues, the current environment in Canada is not conducive to widespread availability of overland flood insurance coverage.

Fortunately, one of the main obstacles to the insurability of flood risk – namely, the predictability of flooding – is also key to the success of public infrastructure investment and land use planning. That is, the fact that floods reoccur periodically in the same places means that targeting these locations with risk mitigation investment is effective in reducing the frequency of flooding and its associated financial cost.

Third, the current state of flood mapping in Canada is inadequate. Governments and insurers need to have an advanced understanding of flood risk, albeit for different purposes and to different degrees of accuracy. They need to identify risk zones for zoning and urban planning purposes, evaluate the vulnerability of critical infrastructure, and be able to quantify and price the flood risk that individual policyholders are exposed to.

Flood hazard maps represent the minimum requirement for establishing a sound risk management culture. In Canada, mapping data is available across the country from conservation authorities; municipal, provincial and federal governments; and a selection of commercial vendors. However, available maps are often not up to date and not of sufficient resolution and quality. These maps haven't been developed to a common and consistent standard across the country, typically exclude urban (i.e., pluvial) flood risk and often assess only a single return period. For all of these reasons, the current state of flood mapping in Canada is inadequate for the assessment of flood risk except at anything more than an aggregate level. Accurate flood maps need to be developed as the first step in any serious government strategy for the management of flood risk.

## The Arithmetic of Flood Insurance Premiums

Individual insurers have their own approach to pricing flood risk based on different methodologies, risk assessment tools and commercial strategies. However, the basic arithmetic of insurance still holds. Here is a stylized example of the constraints within which flood risk typically needs to be assessed.

Property value
$500,000

1-in-50
year floodplain

⋮

$500,000
x 0.25

=125,000
÷ 50

=**$2,500**
a year
for flood
coverage

Imagine a property that is worth $500,000 and located within a 1-in-50 year floodplain. Assume that a typical flood – given the characteristics of the floodplain and the vulnerability of the property being insured – would cause damage worth approximately 25% of the property value. The expected loss from this policy, when the flooding event occurs, is therefore $125,000, which translates into an annualized best estimate of loss of $2,500 (given that each year there is a 1/50 probability of a $125,000 loss).

As a result, even if the insurer set premiums equal to the best estimate of loss (i.e., without incorporating any margin for administrative/operating expenses or profit) the homeowner would have to be charged a premium of at least $2,500 a year just for flood coverage, in addition to the "base" home insurance premium charged for standard coverage.

For other perils, the insurer is typically able to pool together several properties within the same portfolio, under the assumption that not all properties would suffer a loss at the same time, which allows for risk diversification and hence for a reduction in the required average premium. However, when a floodplain floods, all properties are affected at the same time, reducing the diversification benefit. This explains why risk-based premiums for properties in floodplains are, by nature, expensive.

## Compensation through government programs

The limited insurability of flood risk in Canada places the burden for post-disaster reconstruction and recovery on homeowners and taxpayers who are funding disaster relief spending from federal, provincial and municipal governments.

The role of taxpayers becomes clear when examining spending on the Disaster Financial Assistance Arrangements (DFAA) program. Between 1970 and 2013, there were 208 disasters that triggered federal financial assistance under DFAA. Of these, 116 were due to overland flooding (generally, fluvial/riverine flooding) and an additional 60 to 70 (depending on definitions) events were due to storms that are likely to have caused water-related damage associated with flooding.[7]

During these 43 years, the average number of DFAA events has increased threefold – from three disasters per year in the 1970s, to nine disasters per year in the first four years of this decade. And the cost of flood disasters to the federal government has increased by an even greater magnitude. Since the 1970s, federal payments on flood assistance total $6.2 billion – or 70 to 80% of total DFAA spending. These costs have more than quadrupled in 40 years, swelling from a cumulative $300 million in the 1970s, to $1.2 billion in the 2000s, and a staggering $3.7 billion in the first four years of this decade. Annual DFAA spending on flood recovery has also followed a similar trend, jumping from an average of $30 million a year in the 1970s, to $124 million in the 2000s, and almost $1 billion a year during the past four years.[8]

The recent restructuring of the DFAA program has partially redistributed the responsibility for disaster financial assistance by devolving more of these costs to provincial tiers of government. However, taxpayers still remain the primary source of finance for these costs, and the very same trends that are increasing insured losses will also increase economic, uninsured losses borne by governments and taxpayers. That's why federal and provincial governments across Canada have recognized that there needs to be a change in the way Canadians prepare for flooding events and other disasters, and that a partnership with the insurance industry is critical to implement a national solution to the flood problem.

# Case Studies

Every country around the world has had to wrestle with the issues discussed above that make providing flood insurance problematic. The approaches developed by Canada's international counterparts involve various combinations of insurance and government relief. There are approaches that are fully private, fully public or in between; that make flood insurance voluntary or mandatory; and that offer flood insurance on its own or as part of a bundle of several types of coverage.

This section focuses on other G8 countries' provisions for flood insurance to gain insights into ways flood coverage could be offered in Canada. Many different financial management models have been developed – with varying degrees of success. Each model provides important lessons for how Canada can adapt its response to flood management.

In general, the approach to the financial management of flood risk can be categorized based on six variables:

1. Private vs. publicly administered programs
2. Voluntary vs. mandatory insurance take-up
3. Optional vs. bundled coverage
4. Risk-based vs. government-mandated pricing
5. Policyholder-funded vs. taxpayer-funded subsidization of high-risk properties (or neither)
6. Government as insurer vs. enabler of insurance

These variables, in turn, have direct implications for insurance take-up rates and will affect which stakeholders will ultimately bear the lion's share of flood-related financial losses.

Private models are market-based, with government intervention typically being limited to investment in risk assessment and risk mitigation initiatives and with insurance pricing typically being risk-based. Public models are characterized by a strong government involvement in the provision, funding and design of flood insurance. In these cases, governments typically set prices and terms of coverage, making these systems more akin to a social assistance program than to insurance.

In some cases, flood coverage is optional and available as an additional endorsement on a standard (i.e., fire and theft) homeowner's policy on payment of a separate premium. In other cases, coverage is bundled as part of a package inclusive of other perils. There are also instances in which coverage can be both optional and bundled. Indeed, it may be automatically included in a standard homeowner's policy (making it virtually mandatory), or it may be bundled with other optional perils (e.g., earthquake and other natural disasters).

## International Flood Insurance Programs at a Glance

### G8 countries other than Canada

| | Model | Purchase | Packaging | Take-up (residential) | Pricing | Subsidization | Government focus | Financial impact mainly borne by |
|---|---|---|---|---|---|---|---|---|
| **France** | Public | Mandatory | Bundled (with other catastrophes) | 100% | Government-set | Both taxpayers and policyholders | Insurance Funding | Taxpayers |
| **U.S.** | Public | Voluntary | Optional (add-on) | 20–30% | Government-set | Primarily taxpayers | Insurance funding and provision | Taxpayers |
| **Germany** | Private | Voluntary | Optional (add-on) | 25–30% | Risk-based | None | Mitigation and zoning | Policyholders |
| **Italy** | Private | Voluntary | Optional (add-on) | <10% | Risk-based | Taxpayers (indirectly) | Mitigation | Taxpayers |
| **Russia** | Private | Voluntary | Optional (add-on) | <5% | Risk-based | — | — | — |
| **Japan** | Private | Voluntary | Bundled (with comprehensive homeowners policy) | 40% | Risk-based | Policyholders | Mitigation | Policyholders |
| **U.K.** | Private | Voluntary | Bundled (with homeowners policy) | 95% | Risk-based | Policyholders | Mitigation, mapping and zoning | Policyholders |

*Notes: Take-up based on residential coverage. Figures for commercial property are typically higher. No additional information for Russia was available.*

## Germany

In Germany, flood insurance is privately offered as a bundle that includes other natural disasters, and is available to policyholders as an optional endorsement to standard homeowner's policies. Flood is the major peril insured under this optional natural catastrophe coverage, which includes both fluvial and pluvial flooding but excludes storm surges.

The German flood insurance scheme is a private market-based system, largely deregulated, with no backing from government and with private insurers purchasing reinsurance in the international market.

Insurers set policy terms, prices and deductibles independently and based on risk. As a consequence of risk-based pricing, the vast majority of properties are insurable although some may not be. The take-up rate of natural disaster coverage (including flood coverage) is estimated at 30%.[9]

Adequate risk pricing was made possible by government action to forbid floodplain development in risk zones and by an upfront investment to create a nationwide flood mapping tool (known as ZÜRS), which the German Insurance Association (GDV) developed to help insurers assess risk. ZÜRS provides insurers with a zoning system for flood, backwater and heavy rain risks. The system is based on the following four risk zones.

| Risk zone | Return period | Insurance availability |
|---|---|---|
| Very low | >200 years | Insurable |
| Low | 50–200 years | Insurable, conditionally on mitigation measures |
| Moderate | 10–50 years | Insurable, conditionally on mitigation measures |
| High | <10 years | Uninsurable |

*Source: Adapted from* (Swiss Re and ICLR 2010) *and* (Consorcio de Compensacion de Seguros 2008)

The risk zones are used by all insurers to determine insurability (and price). The majority of properties are located in the very-low-risk zone, approximately 10–12% of properties are in the low-risk zone, and only 3% are in the moderate- or high-risk zones.

## Italy

In Italy, flood insurance is available through the private market and can be purchased as an add-on to residential fire policies. This optional product is bundled with earthquake coverage. The flood coverage includes both fluvial flooding and torrential rainfall damages. Additional protection is also provided for landslides that result from rising river waters.

Residential take-up levels are low, at less than 10% of countrywide property values. This is not surprising given that overall property insurance take-up is also low, at approximately 35%.[10]

This low insurance take-up is primarily explained by cultural and institutional reasons. In particular, there is a widespread belief that it is the government's responsibility to compensate losses due to natural disasters. Following natural catastrophes, the Italian government historically intervenes with financial support or ad-hoc legislation.

## Russia

In Russia, insurance for flooding is provided by the private market as an optional coverage.

Qualitative, anecdotal evidence suggests that the insurance product is rather expensive. Cost pressures, combined with a widespread cultural reluctance to purchase non-mandatory insurance products, generally leads to low take-up rates (only 5% of households have basic property insurance).

## Japan

In Japan, private flood insurance coverage was introduced in the mid-1980s. This was part of a government-sponsored flood risk management initiative built on the understanding that for private flood insurance to flourish, flood risk had to be mitigated first.

From the 1960s to the 1980s, Japan saw significant public investment in risk mitigation measures, with a large share of the national budget – ranging from 8% in 1961 (equivalent to 1.5% of the GDP) to 4.5% in the late 1980s (equivalent to 0.5% of the GDP) – invested in disaster risk reduction activities.[11]

These investments were able to bring flood risk under control. At that point, residential flood insurance coverage was introduced by extending standard homeowner's policies to cover damage from typhoons. As such, flood coverage is not available as a stand-alone product but can be obtained as part of a standard homeowner's policy.

Through this approach, flood losses are now compensated, albeit with a significant degree of co-insurance (i.e., insurers compensate for up to 70% of flood damage, with the remaining 30% resting on individuals[12]) to maintain incentives for investment in risk reduction measures.

Although coverage has been incorporated as part of comprehensive homeowner's policies, take-up rates for flood coverage remain relatively low.

## The United Kingdom

In the U.K., flood insurance is privately offered and automatically included in standard homeowner's policies. As such, coverage is virtually mandatory and the vast majority of households are covered for flood damage. However, the current system is unsustainable and is being reformed.

Since 1961, flood insurance has been governed by a series of informal arrangements between the insurance industry and government, beginning with a "gentlemen's agreement" whereby insurers agreed to offer coverage to all properties regardless of risk while government committed to risk mitigation and infrastructure investment.

The initial setup proved unsustainable, largely due to a worsening of weather trends combined with insufficient investment in water infrastructure. The agreement was amended by a series of Statements of Principles. The latest amendment limited insurers' liability by establishing that coverage in areas with a flood probability greater than 1-in-75 years will be maintained only in the presence of new investment in mitigation infrastructure.

Although this is a private market system, both government and individuals have clear roles to play. Government is an enabler of insurance, by providing basic flood mapping, adequate flood control infrastructure and stringent land use planning. Consumers play their part by paying risk-based premiums and, in some cases, by investing in risk mitigation measures to maintain insurability.

Despite the recent amendments, it had been known for some time that the arrangement was unsustainable and would not be renewed. The reason is twofold. First, existing insurers were required to retain high-risk properties, while this didn't apply to new market entrants. Second, the agreement called for government to invest in mitigation, and this investment has not been at the level insurers had expected.

Insurers and government reached a new agreement (known as Flood Re) on June 27, 2013, and the broad legislative structure is in now place. The regulations governing the operations of Flood Re are expected to be tabled following the 2015 U.K. general elections.

In essence, Flood Re is a risk sharing pool, supported by a government commitment to backstop excess losses, which will be operated and financed by insurers as a not-for-profit fund to subsidize flood coverage for high-risk properties. Flood Re was created to ensure availability and affordability to high-risk properties, and to enable a sustainable transition to a risk-based pricing environment over the planned 25-year existence of the Flood Re pool.

Continued real estate development in flood-prone areas, combined with severe under-investment in flood defence and water infrastructure, meant that risk-based premiums for coverage to high-risk properties were becoming unsustainably costly. Addressing the affordability issue required artificially capping premiums for high-risk properties and subsidizing the difference (between risk-based and artificially capped premiums).

Flood Re is a way to explicitly provide such subsidization, by ceding high-risk properties to a risk sharing pool and supplementing this pool with additional revenue from a levy charged to all other policyholders.

Flood Re targets only high-risk properties. Flood insurance for other, non-high-risk properties will remain privately offered. Eligible high-risk properties have been identified through risk mapping (there are between 300,000 and 500,000 properties nationwide, equivalent to approximately 2% of the total properties in the U.K.) and are tracked in a national registry. Homes built after 2009 have been excluded from the scheme to avoid encouraging unwise building in high-risk areas.

Flood insurance coverage will continue to be bundled with home insurance coverage. Insurers will be required to offer coverage to high-risk properties (under their own policy terms), and they can choose to do so independently or by ceding the policy to the Flood Re pool.

- If the risk-based premium the insurer would ordinarily charge for a given policy exceeds the applicable price ceiling, the consumer is charged only the capped price. The insurer then cedes that policy (100% of its capped premium and associated risk) to Flood Re.
- If the premium the insurer is willing to charge is less than the applicable price ceiling, the insurer may choose to retain that policy.

To ensure affordability, the scheme sets out price ceilings for eligible (high-risk) flood insurance policies. The ceilings are adjusted using Council Tax bands (i.e., property tax). This transparent process will allow consumers to know up front the maximum premium they may have to pay if they choose to buy flood coverage.

Because the pool is a concentration of bad risks that are charged less-than-actuarially-sound premium rates, it will always operate at a loss. To mitigate this, the Flood Re fund is topped up through additional income from a levy charged to policyholders, amounting to £180 million per year (equivalent to a £10.50 levy on each policy). This amount is said to be equivalent to what policyholders already implicitly pay to cross-subsidize high-risk properties.

To implement the system, the insurance industry is paying £10 million in start-up costs. Flood Re will also purchase reinsurance to cover losses up to a 1-in-200-year flood event level – and participating insurers will not be liable for losses beyond this level. According to the latest Memorandum of Understanding between government and the ABI, should an event generate industry losses in excess of this level, the government will work with Flood Re and the industry to determine how available resources should be distributed to policyholders.

The role of government will remain limited to:

- Setting the price ceilings for flood coverage, which are anticipated to increase over time;
- Providing financial support in the event of extraordinary catastrophic losses exceeding the capacity of the pool; and
- Investing in new and improved flood defences by spending £2.3 billion over the next four years and committing additional investments over the following six years. The government anticipates that flood risk will be reduced by 5% and that over 300,000 properties will be protected by 2021. However, stakeholders – including the Committee on Climate Change, the National Audit Office and the ABI – have pointed to an estimated £500 million shortfall in the required spending on flood defences.

## The United States

In the U.S., flood insurance is available through a federal program – the National Flood Insurance Program (NFIP). The program was established in 1968 as a joint initiative by private insurers and all tiers of government. The federal government – through the Federal Emergency Management Agency (FEMA) – is responsible for administering the program.

Homeowners can purchase NFIP coverage only if they live in NFIP-approved communities located within 1-in-100 year floodplains, referred to as Special Flood Hazard Areas (SFHAs). For a community to be approved, it must commit to specific floodplain management requirements set by FEMA, which include floodplain development and zoning. Coverage is optional, although it is mandatory for mortgage holders located in SFHAs.

FEMA sets the premiums based on Flood Insurance Rate Maps (FIRMs). Properties that were developed in SFHAs before being identified as high-risk in this mapping system are provided insurance at subsidized premium rates, at a discount as high as 40% of the risk-based rate.[13] Those that were developed after the creation of flood maps pay actuarially sound rates (as determined by FEMA).

In exchange for an expense allowance, private insurers write and service NFIP policies under their own brand. This enables NFIP to leverage insurers' expertise in marketing, underwriting and claims handling, without insurers having to retain any of the associated risk.

Because the NFIP pool is based on selecting only bad risks and heavily subsidizing coverage, the system, by design, cannot be financially self-sustainable. It continues to operate thanks to a backstop guarantee by the federal government. This reliance on public funds to meet unfunded liabilities, instead of leveraging risk transfer through international reinsurance markets, has resulted in compounding public debt. This is further magnified by the fact that flood maps are out of date and floodplain management programs are often not enforced, meaning that the premium rates set by FEMA are likely below their actuarially sound level. Recent moves to try and move prices closer to risk-based levels have faltered due to political pressure. Currently, FEMA/NFIP has debt of approximately $23 billion USD and is unlikely to be able to repay it.[14]

## France

In France, flood insurance is offered as a mandatory bundle that includes other natural disasters, through a government program (Cat Nat) established in 1982. The program combines private insurance with public reinsurance provided by the Caisse Centrale de Reassurance (CCR), a state-owned reinsurer supported by a government backstop.

The government sets Cat Nat premiums at a uniform rate across France, without any differentiation based on risk exposure. Cat Nat premiums are charged to consumers as an additional percentage on their standard property insurance premiums, which is currently set at 12%. All policyholders with standard homeowner's insurance are required to participate.

For a claim to be eligible under the Cat Nat scheme, both national and local governments must declare a state of emergency. Once this happens, government-guaranteed reinsurance funds from CCR become available.

Reinsurance with CCR is not compulsory, and primary insurers can choose to rely on international reinsurance markets instead. There are, however, strong incentives to reinsure with CCR, because the reinsurance premiums charged are artificially low and because it can offer unlimited coverage with low solvency and liquidity risk owing to the government's backstop guarantee.

The main drawbacks of the French model are related to the public nature of rate setting and risk transfer.

Public rate setting means that premium rates are set by government rather than based on risk. Not only does this remove any incentive for risk mitigation investment (both by individuals and by local authorities), it is also rather unfair as it effectively forces low-risk consumers across the country to subsidize those at higher risk of disaster (although the offering of a multi-peril, all-catastrophe bundle ameliorates fairness concerns). As such, the system is more akin to a welfare or risk redistribution program than insurance.

Public risk transfer results in reinsurance rates (through CCR) being artificially low and reinsurance payouts being state-guaranteed, both of which create a strong incentive for primary insurers to reduce their retention rate (i.e., to increase the share of risk ceded to CCR), especially for high-risk portfolios.[15] This, in turn, places considerable stress on CCR and, hence, on taxpayers.

# Best Practices and Lessons Learned

## The role of insurance

In many developed economies, there is a role for insurance in the financial management of flood risk. This has several advantages over relying on government disaster relief programs. There are two reasons for this. First, while the objective of government relief programs is to reduce hardship by providing basic financial support, insurance seeks to fully compensate consumers by restoring them to their pre-disaster position. Second, while government relief programs typically encourage risky behaviour, insurance premiums are a function of the underlying risk, therefore creating a strong incentive for consumers to undertake risk reduction measures.

However, unlike standard homeowner's insurance, which is rather common, the take-up of flood insurance is typically very limited even in countries where an established flood insurance market exists. As IBC's analysis indicates, take-up rates fluctuate considerably with each country's experience, but are frequently within the 10% to 20% range unless the product is mandatory or bundled with other perils.

Adverse selection – when flood coverage is demanded only by high-risk consumers – is the main reason for the failure or fallibility of many of the international models. Because of adverse selection and the predictability (or non-randomness) of flood risk, risk-based premiums tend to be unaffordable. This leads to low take-up rates, which, in turn, reinforce the adverse selection problem.

This is particularly true of insurance schemes based on optional coverage. By contrast, where flood insurance is provided as part of a wider bundle, adverse selection and the resulting high premiums are greatly reduced. In fact, evidence from international experience suggests that flood insurance works best when bundled with other perils.

One of the main downsides with bundled coverage is that it forces low-risk consumers to subsidize high-risk ones (which is what allows for lower premiums). However, to the extent that most of the bundled product is priced based on risk, the outcome can still be equitable as low-risk consumers will be charged lower premiums overall. Moreover, the erratic severe weather patterns experienced in recent years – where locations previously deemed low-risk have suffered large flood losses – suggest that more properties than previously thought are likely to experience flood damage in the future, further reducing any unfairness inherent in the bundled approach.[16]

That said, the experience of countries such as Germany indicates that a relatively high rate of take-up can be achieved even in the absence of mandatory or bundled coverage, as long as there is a well-designed system of incentives supported by a sound risk management culture. Importantly, this includes an environment where private insurers have freedom to charge actuarially sound rates[17] and where government relief programs do not discourage the uptake of private insurance coverage.

## The role of government

As a comprehensive Organization for Economic Co-operation and Development (OECD) study determined, "if the private insurance industry remains the main provider of flood coverage, it is essential for [government] to provide the appropriate conditions for managing flood risk."[18] This implies that government action should focus on:

- Promoting risk mitigation measures by means of direct investment in infrastructure and through implementation of early warning systems and strict enforcement of zoning, land use planning and floodplain development regulation;
- Increasing public education and awareness to ensure homeowners understand the risk they face and what they can do to mitigate it, and are financially prepared; and
- Addressing the issue of high-risk properties by either providing subsidies to households for whom insurance is unaffordable, or through financial relief programs that specifically target high-risk properties that may be commercially uninsurable.

In addition to these three key roles, developing a sound risk assessment platform through up-to-date flood maps is paramount. Because of increasingly severe and volatile weather trends, the immediate and long-term management of flood risk must hinge on a reliable analysis of associated losses. Throughout history, flood insurance has typically been introduced only in countries that have developed a sound flood risk management culture[19] – including techniques for an advanced assessment of the risk and ongoing investment in risk mitigation infrastructure.

For example, official flood risk zones that are developed based on a common understanding of risk – such as those used in Germany – are important to ensure equitable treatment of consumers. Such strategies establish a shared understanding of what is or isn't commercially insurable, setting appropriate expectations for consumers and governments alike.

While this strategy doesn't necessarily imply that governments should develop flood maps for use by insurers (as the underlying requirements are often different), governments should at least develop flood maps that can be relied on for land use planning purposes. Governments should also make the data available to the private market to ensure widespread understanding of risk.

Finally, even when an insurance scheme is designed to address the affordability issue of high-risk properties (for example, by bundling coverage), insurance for properties where there is a very high likelihood of frequently recurring losses may not be commercially viable.[20] In these cases, alternative government-sponsored risk management approaches – ranging from targeted investment in risk mitigation, to relocation of the property outside the high-risk area and the use of government relief funds – may make more economic sense.

## What this means for Canada

A frequent question that arises is: Why is Canada alone among G8 countries in not offering flood insurance coverage?

First, while residential flood coverage is not available across the country and for all water-related risks, Canadian P&C insurers already cover water-related damage, including sewer backup, through both residential and commercial policies, and overland flooding, through automobile and commercial property policies. As a result, Canadian insurers have suffered losses at or near $1 billion for five years in a row – and in 2013 that figure was a staggering $3 billion or more – making water claims the number 1 cause of home insurance losses across the country.

Second, simply having a flood insurance program is not enough. It needs to be a program that works, and many of the international schemes that we have examined simply don't work. None of them offer an effective "off-the-shelf" solution that could be implemented in Canada.

IBC's review has highlighted two important distinctions between alternative flood insurance models.

First, many of the schemes are not financially sustainable. Countries such as the United States implemented a program that, by design, is financially unsustainable leading to ballooning public debt in recent decades.

Second, many of the international schemes reviewed enable compensation but at a cost that may be unaffordable to some. The key to designing a financially sound flood program is to price coverage based on actual risk. That, however, means that high-risk consumers will pay high premiums.

Affordability for all consumers, including those at highest risk, comes at a cost. If coverage for high-risk individuals is available at premiums below the level that would be necessary based on actual risk, that difference will have to be made up through one of two approaches. It must either be spread among all policyholders by bundling the product – in which case low-risk policyholders subsidize high-risk ones – or it must be paid through government subsidies – in which case taxpayers subsidize high-risk policyholders.

Whether residential flood insurance will ever become commercially viable in Canada, the international experience clearly points to four preconditions that are essential to establish a strong flood risk management culture:

1. There must be accurate, up-to-date flood hazard mapping to allow all tiers of government – as well as insurers, developers and other key private sector stakeholders – to make smart decisions about mitigation investment, urban development and flood risk management.
2. There must be ongoing, targeted investment to build and maintain resilient flood defences and sewer and stormwater infrastructure.
3. There must be widespread risk awareness and a sound understanding by all stakeholders – including governments, communities and individuals – of the physical and financial consequences of flood risk and of the tools that are available to ensure Canadians are prepared.
4. There must be limited recourse to government revenue to finance post-disaster compensation to ensure that individuals face effective risk-mitigation incentives, and the financial burden on taxpayers is minimized.

Although these basic preconditions are not in place today, there are growing signs that Canada is moving in the right direction.

The 2014 Economic Action Plan announced a proposal to develop a National Disaster Mitigation Program (NDMP). The objective of the NDMP is to take a proactive approach to disaster risk management and to reduce the impact of natural catastrophes on Canadians.

In addition to generating new investment for disaster protection and mitigation initiatives, the NDMP aims at prioritizing measures to identify and mitigate the impacts of floods, including the strain on government finances and the Disaster Financial Assistance Arrangement (DFAA) program.

These initiatives are consistent with Public Safety Canada's all-hazards approach to emergency management, which sees prevention and mitigation activities as one of its four pillars. These activities are aimed at eliminating or reducing the risks of disasters in order to protect lives, property and the environment, and reduce economic disruption. Mitigation includes structural measures. such as construction of floodways and dikes, and non-structural measures, such as building codes, land-use planning and insurance incentives.

The Economic Action Plan also announced the government's plans to consult with the industry to explore options for a national approach to residential flood insurance and insurance issues arising from natural disasters more generally, noting that Canada is the only G8 country without residential flood insurance coverage.

Recently, individual insurers have started taking steps to address this coverage gap by introducing, or exploring the introduction of, some type of residential overland flood insurance product.

Nevertheless, it remains clear that Canada and its P&C insurance industry need a more comprehensive and institutionalized solution to tackle the pressing challenges faced by high-risk properties. For this reason, IBC welcomes the federal government's recent commitment to work with the industry to develop a national approach to flood insurance – an approach that, from the industry's perspective, will need to address the preconditions identified above and identify clear roles and responsibilities for all stakeholders.

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# Climate-Related Scenarios Applied to Insurers and Other Financial Institutions

Climate Risk Task Force

August 2021

# IAA Paper

## Climate-Related Scenarios Applied to Insurers and Other Financial Institutions

This paper was prepared by the Climate Risk Task Force of the International Actuarial Association (IAA).

The IAA is the worldwide association of professional actuarial associations, with several special interest sections and working groups for individual actuaries. The IAA exists to encourage the development of a global profession, acknowledged as technically competent and professionally reliable, which will ensure that the public interest is served.

The role of the Climate Risk Task Force is to deliver on the Statement of Intent for IAA Activities on Climate-Related Risks (SOI) as adopted by Council on 7 May 2020.

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This paper has been approved for IAA publication by the Climate Risk Task Force in accordance with the IAA's Communications Policy.

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*This paper was written prior to the release of the Sixth Assessment Report (AR6) produced by the Intergovernmental Panel on Climate Change (IPCC). AR6 adds to AR5 and updates it. The reader is advised to consult AR6 for updated information.*

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## Executive Summary

Scenario analysis is a core component of climate-related risk assessment and disclosure. This topic is of increasing importance to businesses, governments, standard-setters, and supervisors as they seek to understand the future impact of climate-related risks.

The actuarial profession has considerable experience and expertise with the construction and use of scenarios in risk management processes used by insurers and other financial institutions. With the increasing importance of climate-related risk, the actuarial profession recognizes the need to outline practical approaches in applying climate scenarios to firms.

This paper builds on an earlier IAA paper, "Introduction to Climate-Related Scenarios".[1] It examines the challenges faced by actuaries in implementing scenario analysis for climate-related risks and outlines a range of possible approaches.

The scope and information provided cover a wide variety of situations faced by actuaries working in different contexts. In addition to considering scenario development, the paper examines the guidance provided by several actuarial organizations to their members regarding climate risk assessment. An understanding of the various aspects of actuarial work which can be affected by climate risk is the foundation for the profession's role in scenario analysis.

The application of climate scenarios in firms is subject to a number of practical challenges different from those encountered with other more traditional categories of risk. For example, the climate scenarios provided by globally recognized agencies such as the United Nations Intergovernmental Panel on Climate Change lack the specificity needed by actuaries and firms to model their risks. This paper provides suggestions for incorporating the necessary specifics, using Australia for illustration. Another area requiring care in the preparation of climate scenarios relates to the time horizons over which climate-related risk may emerge. On the one hand, climate-related physical risks are frequently considered to develop over many years, while the timing and impact of climate-related transition and legal and reputational risks may be highly uncertain. This paper provides practical suggestions for incorporating these risks into climate scenarios.

The impact of the above guidance is illustrated for various businesses, namely investment and pension firms and general, life, and health insurers. Climate scenario developments from a number of other jurisdictions are provided so that readers can gain an appreciation of the range of activity on this topic.

Three simplified case studies are included to illustrate the concepts developed in this paper. These case studies have been chosen to stimulate broad thinking rather than to focus on an approach taken by a specific financial institution or for specific blocks of business.

It is hoped this paper can assist actuaries and others to understand the building blocks of climate-related scenarios and how they can be used to inform many critical risk management functions surrounding climate-related risks. Doing so will enable firms to better understand the risks involved and meet emerging disclosure and reporting recommendations or requirements.

While these scenarios should reflect a firm's own situation, it is hoped that in due course they will become sufficiently standardized to facilitate comparisons of disclosures across firms, industries, and countries.

Just as importantly, firms will identify ways to take advantage of the opportunities which will arise from a transition to a more sustainable world.

## Introduction

This paper is the third in a series of papers that the IAA Climate Risk Task Force has committed to develop over the coming years. The first paper was entitled "The Importance of Climate-Related Risks for Actuaries"[2] and was an introduction to the series. The second was an "Introduction to Climate-Related Scenarios".[3]

This paper continues the discussion in "Introduction to Climate-Related Scenarios", bringing the process of using scenarios to the level of an individual insurer or other financial institution ("firm") operating in a national jurisdiction. Many firms operate globally, but first it is useful to consider the problem from the perspective of a single country. Certain risks relating to transition are largely a function of the laws and policies at a country level, so starting there and then expanding the focus provides a practical and useful approach.

This paper does not cover the scientific basis of climate change beyond what is necessary for understanding its impacts. It is assumed that basic scientific information, such as the climate-related effects of various scenarios related to greenhouse gas (GHG) emissions, is known or available from sources such as the Intergovernmental Panel on Climate Change (IPCC). It is also assumed that key policies in countries in which a firm operates or is exposed, and which will impact transition risk, can be identified; examples include those involving carbon taxes or electric vehicles.

This paper covers a wide range of users (insurers, banks, pension schemes, and enterprises in various sectors) in different countries around the world but individual users may wish to only consider the subset of requirements that are relevant to the specific circumstances and purposes of the scenario at hand.

This paper was written in the first half of 2021. The state of the art and details of how various scenarios are constructed and used are evolving rapidly. Readers should anticipate that some of the contemporary examples used will be superseded by others before the IAA refreshes this paper. Illustrations in this paper are thus focused on the conceptual framework for scenario application using available examples, the details of which may not be appropriate for applications in the future.

This paper is organized into six sections:

- Section 1 discusses sources of information that may be used to support the development of specific estimates of changing weather from general climate scenarios, as well as general considerations for reporting financial effects to external stakeholders. An example of a set of standardized assumptions being developed for physical risk events in Australia is presented (the Climate Measurement Standards Initiative, or CMSI), followed by an outline of the general components of scenarios for transition. Legal and reputational risks (LRRs) are also discussed. The section concludes with a summary of scenario-analysis initiatives from several global regulators, including the European Insurance and Occupational Pensions Authority (EIOPA), French Prudential Supervision and Resolution Authority (ACPR), and Bank of England.
- Section 2 discusses actuarial considerations in climate-related risk analysis. It draws on an Information Note from the Actuaries Institute Australia which provides guidance on climate-related risks to Appointed Actuaries in preparing Financial Condition Reports (FCRs), and other global sources of actuarial practice guidance.
- Section 3 presents the concepts of systems thinking and systems dynamic modelling, to illustrate the importance of considering the broad environment in which a firm operates. This includes interactions between the political structure, prevalent economic

theories, resource usage, self-sufficiency, social cohesion, and other socioeconomic factors.

- Section 4 reviews how scenarios can be updated over time and outlines considerations for integrating scenarios within enterprise risk management (ERM) frameworks.
- Section 5 contains three simplified case studies illustrating specific scenarios. The first illustrates impacts on agriculture and food supply, as well as agricultural insurance, from an insurer's perspective. The second illustrates transition risks in a region dependent on fossil fuels from the perspective of an insurer (underwriter) or pension fund (investor). The third provides historical examples of how complex systems have been affected by extreme weather events and fragility.
- Section 6 reviews next steps.

Accompanying this paper is a separate glossary[4] of terms used, which the IAA will update as further papers on climate-related risks are developed.

# 1. Sources of Information and Considerations for Reporting Financial Effects

A significant challenge with setting boundaries for scenarios involves the lack of specificity in the guidance provided by the bodies defining standards or frameworks, including the Task Force on Climate-Related Financial Disclosures (TCFD). This is understandable given the early stage of development of techniques in this area, but nevertheless can lead to disclosures which are not comparable between firms. For example, there is considerable latitude around which Representative Concentration Pathways (RCPs) should be used, what time horizons are appropriate, and which models translating general climate conditions into specific weather event scenarios should be considered. The selection of key parameters such as these can make a significant difference in the measurement of the risks which could affect a firm's operations.

This section reviews the CMSI, an Australian framework for developing such specificity for physical risks. It also presents a structure for considering transition risks for firms in general, followed by a discussion of LRRs.

## 1.1 General Components of Scenarios

Before exploring some specific examples of scenario development, it is helpful to review the components of a scenario. While there is no attempt here to develop a comprehensive list of every aspect of possible scenarios, the following basic elements should be considered:

- *RCPs*: The IPCC 5th Assessment Report (AR5) identified four key temperature pathways for future GHG emissions. These represent a reasonable range of possible future states:[5]
    - RCP 2.6, which is consistent with an ambitious reduction in emissions aiming to limit global warming to below 2 degrees Celsius (2°C) above pre-industrial levels, the goal of the Paris Agreement. Its emissions were to peak around 2020.
    - RCP 4.5, which is an intermediate emissions scenario. Emissions would increase modestly until 2040 before declining. It is likely to produce warming of about 2.4°C.
    - RCP 6.0, a high-intermediate scenario, where emissions peak around 2060 and decline thereafter. It is likely to produce warming of about 2.8°C.

  - RCP 8.5, a scenario assuming little action to reduce emissions. It is likely to produce warming of about 4.3°C. While extreme, it is not intended to represent a worst-case scenario.

- *Time horizons*: Physical and transition risks will emerge over time (and at different times depending on mitigation actions taken), so future time frames should be specified when specific risks are evaluated.
- *Specific localized impacts*: Physical risks arise when climate change results in extreme weather patterns at the local level or changes to land cover, crops, and other environmental parameters. RCPs must be translated into changes in the frequency of weather events at specific locations, such as an increase in dry days leading to drought or fire risk in an area, additional extreme rainfall leading to flooding in a catchment, heat stress changing the type of crops which can be grown, etc.
- *Specific local economic and technological changes*: Governments around the world will enact and enforce changes in policy differently using a range of technologies to achieve national objectives. Although available technologies may be common, due to resources and differences in local conditions these technologies may be applied differently. Many factors can affect such policies; for example:
  - Commitments to overall objectives, such as "net zero by 2050";
  - Local economic conditions, including the country's ability to afford investments in renewable energy and its infrastructure;
  - Local renewable energy capabilities, such as access to hydropower, the amount of sun for solar power generation, wind patterns for wind power, etc.; and
  - The availability of "bridge" power supplies, such as nuclear, hydrogen, or gas, to replace thermal coal.
- *A view of the prospective political situation*: The ability to implement and sustain the potentially disruptive economic transformations required to achieve a reduction in GHG emissions is a function of the country's political system and policies. Scenario construction should consider such factors as the likelihood of policy reversals, etc.
- *Technological assessment*: Possible new technologies, such as hydrogen-powered transport or smart electric grids, should be studied with appropriate cost–benefit analysis.
- *Nature of economic changes*: A transition to a low-emissions economy can be either gradual or abrupt. Scenarios should consider the nature of change, particularly regarding transition risk, and the underlying uncertainty of future assumptions.
- *Level of resilience*: Resilience of the local population, consumer behavior, the building stock, the agricultural system, etc., and the strategic or other importance of that place or people to other countries should be considered. The level of resilience affects the type and severity of impacts.

Several of the socioeconomic points above have been formulated into unique scenario narratives described as the Shared Socioeconomic Pathways (SSPs).[6] These narratives lead to assumptions relating to factors such as population, economic growth, and technology, to produce a global climate outcome aligned with the RCPs.

Globally, strong action to reduce physical risk will generate significant transition impacts. For example, achieving RCP 2.6 will involve quickly making major changes to power generation that will create transition risk. Conversely, failure to transition to low emissions will increase

physical risk by making the RCP 6.0 and RCP 8.5 scenarios more likely. The level of transition risk is affected by the speed of transition and whether there are policy changes or reversals.

The time horizon over which risks emerge should also be considered. Physical risk generally emerges gradually (though there can be acute emergence of physical risk in some cases), while transition risk and LRRs can develop quickly because of changes in government policy or litigation against firms. Further, even with aggressive mitigation efforts to reduce GHG emissions, there will continue to be significant physical risk in the medium term as changes in weather patterns and sea levels reflect emissions over past decades and are already "locked in". Thus, scenarios should consider that there may be significant physical and transition risks, plus LRRs. This difference in time horizons explains some of the inertia involved with enacting decarbonization strategies.

A further general consideration involves the global nature of emissions policy. Effectively mitigating emissions and reducing physical risk require global action, which is the rationale behind the Paris Agreement and subsequent negotiations. Transition risk and LRRs, however, generally reflect policies at the national level. Thus, a firm could face a scenario wherein its national government enacts extremely tough emissions reductions, creating significant transition risk, while due to the inaction of other countries, emissions overall continue on an RCP 6.0 to 8.5 trajectory, leading to extreme physical risk. While value judgements about the appropriateness of "right" and "wrong" actions is outside the scope of this paper, various countries and supranational organizations will face significant pressures from a range of interest groups. An understanding of this is essential for a proper assessment of the risks and inherent uncertainty in scenarios developed to inform a firm's decision making. A lack of timely feedback between those responsible for emissions and those experiencing the adverse impacts has been one of the largest barriers to action.

As mentioned above, physical and transition risks may be poorly correlated across both space and time. LRRs are similar to, and in some cases characterized as, transition risks, since they can be expected to arise from entities' failure to enact certain policy changes, adopt low-emission technologies, or make appropriate disclosures.

The following table illustrates some general characteristics of physical and transition risks at a macro level that underlie the later discussion. Here "physical risk" refers to the emergence of real-world effects; some risks may emerge earlier if markets "price in" future events. This table is deliberately simplified to illustrate characteristics; actual risk characteristics are more complex.

Table 1 – General Characteristics of Physical and Transition Risks

| Topic | Physical Risk | Transition Risk |
|---|---|---|
| **Timing of risk emergence** | Gradual, long-term view essential<br>Risks may emerge rapidly if tipping points are reached | Possibly sudden or quick, but long-term view is challenging due to high level of political and social uncertainty |
| **Ability to change risk in the near term** | Low | High at the macro level |
| **Uncertainty in forecasts** | Near term: low to moderate<br>Medium to long term: moderate to high | High over all time horizons as to the precise nature of changes due to political, technological, and social uncertainty |
| **Nature of expert opinion** | Largely scientific and climate-focused, involving both weather and its effect on the ecosystem and physical assets | Varies, involving complex analysis of technology, macroeconomics, political situations, litigation environment, etc. |
| **Scale of action** | Global, based on coordinated local activities; physical risks will be influenced by local action | Local, with national policy dominating sources of risk; transition risks will be influenced by global action |
| **Measurement tools** | Objective measures in weather and climate data, supplemented by financial consequences of natural events (e.g., insurance losses from disasters) | Social, economic, and political data, supplemented by financial analysis of various mitigation and adaptation strategies |

## 1.2 Physical Risk Scenarios: The Climate Measurement Standards Initiative, Australia

The CMSI provides a roadmap of how a set of physical risk scenarios can be developed. According to the CMSI Summary for Executives[7] (page 4):

> In its first phase, the CMSI has recommended financial disclosure guidelines and developed scientific scenario specifications for the purpose of disclosure of scenario analyses for climate-related physical damage to buildings and infrastructure. It considers a wide range of chronic and acute risks for the general insurance, banking and asset owner sectors. These guidelines and specifications are open-source and voluntary.

To build a scenario, the CMSI first considers local effects of two scenarios: RCP 2.6 (low case) and RCP 8.5 (high case). It then selects timeframes of five years in the future, 2030, 2050, and 2090. It uses two SSPs: SSP1, reflecting a "sustainable" pathway; and SSP5, reflecting continued reliance on fossil fuels. It should be noted that there are significant uncertainties in long-term projections such as those to 2090.

It identifies the following general attributes of the scenarios as shown in the table below:

**Table 2 – Attributes of Low and High GHG Emission Scenarios**

| Sector | Carbon dioxide emissions | Likely global SSP* | Global warming relative to 1850–1900** | Transition risk | Physical risk |
|---|---|---|---|---|---|
| Low case | Net zero by around 2070 (RCP2.6) | Sustainability (SSP1) | 1.3–2.2°C by 2050<br>0.9–2.4°C by 2090 | Higher challenges | Lower challenges |
| High case | High and accelerating (RCP8.5) | Fossil fueled development (SSP5) | 1.8–3.0°C by 2050<br>3.2–5.4°C by 2090 | Lower challenges | Higher challenges |

* There is an emerging system of SSPs that can be related to different RCPs.

** CMIP5 (Coupled Model Intercomparison Project Phase 5) models reported in IPCC (2013), but new-generation climate modelling suggests that even greater warming late in the century than cited here cannot be ruled out (see Grose et al. 2020).

*Source:* CMSI Summary for Executives[8] (page 6)

The CMSI's climate science report identifies two categories of climate hazard that can cause property damage:

- *Acute*: Extreme weather events like tropical cyclones or hailstorms; and
- *Chronic*: Gradually emerging issues like rising sea levels or increasing temperatures.

The CMSI then identifies specific expected weather effects for Australia. In Table 3 below, TS1 shows projected effects for acute hazards, while TS2 shows chronic hazards.

This is the type of specific information required to adjust models used to price property insurance policies or evaluate catastrophe reinsurance programs for future climate conditions. Modelling experts can take this information and estimate how metrics like average annual loss or probable maximum loss are likely to change in the future at specific locations. This information can inform physical risk assessment for various purposes, including insurance risk evaluation or public policy decisions such as the degree to which building codes need to be adjusted to "future proof" them against climate-related risks.

## Table 3 –Projected Effects for Acute Hazards, and Projected Changes Relative to 1966-2005 Chronic Hazards

**Table TS1:** Observed and projected changes in climate variables that influence physical risks for buildings and critical infrastructure in Australia. For each variable, the average in the IPCC baseline period (1986-2005) is given, along with the observed change averaged over recent decades (from 1986 onwards). Green text show projections for a low emissions scenario (RCP2.6 based on global warming of less than 2°C by 2090 while red boxes show projections for a high emissions scenario (RCP8.5 based on global warming of 3-5°C by 2090). Projections have a central estimate and a range of plausible change (based on 10th-90th percentile estimates considering multiple lines of evidence - for details see Section 3.2). These are broad estimates for Australia as a whole, or large regions of Australia. Spatial variation within Australia exists for all quantities and can be examined in the model projection data, with values above or below these also being possible and noting a wide range of uncertainties as discussed from literature examples in Section 3.2. Confidence ratings, using the IPCC guidance, provide an assessment of confidence that the range of change is a reliable and complete description (continued overleaf).

| Extreme or hazard | Average in 1986-2005 | Observed change and attribution | 2030 | 2050 | 2090 | Confidence rating |
|---|---|---|---|---|---|---|
| Tropical cyclone (TC) frequency in Australian region | 10-11 per year | -10%, weak | East -4% [-8% to 1%]; West -6% [-10% to -2%] | East -4% [-8% to 1%]; West -6% [-10% to -2%]<br>East -8% [-15% to 2%]; West -12% [-20% to -4%] | East -4% [-8% to 1%]; West -6% [-10% to -2%]<br>East -15% [-25% to 5%]; West -20% [-30% to -10%] | Medium |
| Cat 4-5 TC frequency, noting relevance for damaging winds | 2-3 per year | Little change (noting large variability), none | Little change or small increase | Little change or small increase<br>Little change or increase | Little change or small increase<br>Little change or increase | Low-Medium (for examples of numbers published in previous studies see Section 3.2) |
| TC location (latitude) with changes noted for southern extent | 10-20°S common (30°S less common) | Little change or small poleward expansion, none | Little change or small poleward expansion | Little change or small poleward expansion<br>Little change or poleward expansion | Little change or small poleward expansion<br>Little change or poleward expansion | Low (for examples of numbers published in previous studies see Section 3.2) |
| East coast low (ECL) frequency | 20 per year, with 2-3 Intense ECLs per year impacting on land | -10% (but with large variability), weak | -10% [-15% to -5%] | -10% [-15% to -5%]<br>-20% [-30% to -10%] | -10% [-15% to -5%]<br>-35% [-50% to -20%] | Medium (Low for summer and High for winter) |

| Extreme or hazard | Average in 1986-2005 | Observed change and attribution | 2030 | 2050 | 2090 | Confidence rating |
|---|---|---|---|---|---|---|
| Extreme rainfall intensity (considering 20-year return period) | Spatially variable intensity | +10% hourly and +7% daily (but with large variability), weak | +10% [+5% to +15%] hourly; +7% [+4% to +10%] daily | +10% [+5% to +15%] hourly; +7% [+4% to +10%] daily<br>+20% [+10% to +30%] hourly; +15% [+8% to +20%] daily | +10% [5% to 15%] hourly; +7% [4% to 10%] daily<br>+35% [+15% to +55%] hourly; +25% [+15% to +35%] daily | High for direction of change and Medium for magnitude of change |
| Extreme sea level events | Spatially variable | Mainly driven by mean sea level rise: 3 mm/year, strong | 1-in-100-year event becomes an annual event by the end of the present century under RCP 2.6 and by mid-century under RCP 8.5 | | | High |
| Floods | Spatially variable and dependent on flood type | No clear signal | Increase more likely than a decrease for most types of floods; Increases very likely for coastal flooding (based on the rate of sea level rise) and small-scale flash floods (based on extreme rainfall increases). | | | Low for large catchments and large floods in general (including river and surface water); High for coastal and flash floods |
| Large Hail (>2.5 cm diameter) frequency in city-scale regions | About 5-10 per year in eastern regions and 0-5 per year elsewhere | No information | Little change, but potential increase in east and poleward shift in features | As for 2030<br>As for 2030 | As for 2030<br>As for 2030 | Low |
| Extreme fire weather days (exceeding 95th percentile) | About 18 days per year to once every few years | 15%, medium-high | +20% [+5% to +35%]; East +15% [+0% to +30%] | +20% [+5% to +35%]; East +15% [+0% to +30%]<br>+40% [+10% to +70%]; East +30% [+0% to +60%] | +20% [+5% to +35%]; East +15% [+0% to +30%]<br>+75% [+20% to +130%]; East +55% [+0% to +110%] | High; Medium in East. Low confidence for lightning ignition and fuel load (as key risk factors particularly in north and central Aust) |

**Table TS2:** Observed and projected changes relative to 1986-2005 in chronic climate hazards that influence physical risks for buildings and infrastructure in Australia. Table details as for Table TS1. These are broad estimates for Australia as a whole, or large regions of Australia. Spatial variation within Australia exists for all quantities and can be examined in the model projection data. More detailed projections for four regions are provided in Section 3.

| Climate variable | Observed change and attribution | 2030 | 2050 | 2090 | Confidence rating |
|---|---|---|---|---|---|
| Annual average temperature | Around +1.4 °C since 1910 (strong) | +0.6 to 1.4 °C | +0.5 to 1.5 °C<br>+1.5 to 2.5 °C | +0.5 to 1.5 °C<br>+2.5 to 5.0 °C | Very High |
| Average sea level | Increased by 3.1 mm/year during 1993-2009 (strong) | +0.07 to 0.2 m | +0.1 to 0.3 m<br>+0.1 to 0.3 m | +0.2 to 0.6 m<br>+0.4 to 1 m | Very high |
| Average annual rainfall | Decreased 11% in the southeast during April to October for 1999 to 2018 relative to 1900 to 1998, and decreased 20% in the southwest during May to July since 1970 relative to 1900 to 1969 (strong), with an increase of 10mm/decade from 1900-2019 in the north (weak) | East: -13 to +5%<br>North: -9 to +4%<br>South: -9 to +2 %<br>Rangelands: -10 to +6 % | Drier in the south and east, uncertain in the north (see Tables 3.1-3.4)<br>Drier in the south and east, uncertain in the north (see Tables 3.1-3.4) | | High in southern Australia, Low elsewhere |
| Time in Drought· | Insignificant (weak) | Increase in many regions (see Table 3.6 and 3.7) | No data<br>Significant increase in many regions (see Table 3.6, 3.7) | | High in southern Australia, Low elsewhere |
| Annual days >35 °C# | Increase (strong) | Increases (see Table 3.8) | Increases (see Table 3.8)<br>Large increases (see Table 3.8) | | High |

*Source:* CMSI Scenario Analysis of Climate-Related Physical Risk for Buildings and Infrastructure: Climate Science Guidance[9]

The CMSI goes on to offer seven recommendations for developing scenarios to support reporting under the TCFD framework, which are summarized below. This paper does not endorse the validity of these recommendations but presents them to illustrate the types of practical considerations needed to construct physical risk scenarios.

- *Recommendation 1*: Disclosures should be made under a 2°C-or-lower scenario, RCP 2.6, and a greater-than-2°C scenario, RCP 8.5.
- *Recommendation 2*: Disclosures should be made for five years from the date of the disclosure, and then for 2030, 2050, and 2090.
- *Recommendation 3*: Disclosures should include a static scenario for both cases outlined in Recommendations 1 and 2. This refers to holding the portfolio of assets constant over time in order to measure the effects of changing climate-related risks without the complication of other changes in demographics, adaptation, etc.
- *Recommendation 4*: As well as in aggregate, disclosures should also consider the following sectoral splits where they are material to the business (Table 4):
    - By portfolio (for example, home loans, commercial loans, commercial insurance, personal insurance);
    - By hazard (for example, tropical cyclones, floods, convective storms and hail, coastal inundation, bushfire, soil contraction); and
    - By geographic region.
- *Recommendation 5*: Material impacts for these items at the specified timeframes (from Recommendation 2) should be disclosed.

**Table 4 – Accounting Items**

| | Banks | General Insurers | Asset Owners |
|---|---|---|---|
| **Balance sheet** | Loans to firms and households<br>Provisions for loan impairment | Outstanding claims<br>Reinsurance recoveries on outstanding claims | Total value of investments<br>Values of investments in physical infrastructure and/or other real estate |
| **Income statement** | Loan impairment charges | Gross incurred claims<br>Reinsurance recoveries on incurred claims<br>Gross premium income<br>Reinsurance expenses | Adjustments to the value of income from investment in physical infrastructure and/or other real estate |
| **Other metrics** | Impact on probability of default<br>Impact on loss given default | Portfolio Annual Average Losses for weather-related events<br>Portfolio Annual Exceedance Probabilities for 1 in 100-year events<br>Portfolio gross and net of reinsurance Probable Maximum Losses for 1 in 200-year weather related events | Overall % of value of investments subject to material physical risk |

*Source:* CMSI Summary for Executives (page 14)

- *Recommendation 6*: Disclosures should describe both the confidence and uncertainty in the critical assumptions made regarding the impact of climate change on hazards driving physical risk losses under each scenario.
- *Recommendation 7*: Without giving precise direction on how resilience should be disclosed, the CMSI provides commentary on some factors that could be used in assessing the resilience of different strategies. These factors include high-risk assets and liabilities, portfolio concentration, risk management, capital and other expenditure associated with resilience plans, impact on customers, GHG mitigation, and adaptation and resilience measures.

The CMSI provides a useful framework to illustrate the type of factors which underlie reporting under TCFD. Specific guidance is provided on the following:

- RCP scenarios;
- Timeframes;
- Specific weather effects by location, time, and peril;
- Composition of the asset portfolio being examined (static);
- How disclosures should be organized;
- What accounting items should be forecast;
- Confidence and uncertainty; and
- Adaptation and resilience.

## 1.3 Transition Risk (and Opportunity)

Although risk practitioners and actuaries usually consider the term "risk" to include both upside and downside variability, common usage and some practitioners may use the term to refer solely to downside impacts. In that context, it is inaccurate to describe climate effects solely in terms of "risk", since changes in climate will create a range of possible outcomes. Many of these will pose downside risks, such as losses to properties, declines in asset values, and loss of customers and/or market share. However, climate effects can also create opportunities, such as higher food production in certain high-latitude regions, new "green" investment vehicles, and growing customer demand for services.

The 2017 TCFD Report[10] specifically refers to "Climate-Related Risks, Opportunities, and Financial Impacts" and has separate sections on "risks" and "opportunities". This paper follows the lexicon used by most actuaries and takes "risk" to include both downside and upside effects. Many have argued that a transition to a decarbonized world will lead to a net overall increase in metrics like employment, wealth, and well-being. If correct, transition would create significant opportunities for firms which anticipate and capitalize on transition effects.

As discussed in Section 1.1, transition risks are characterized by greater uncertainty as to their nature and timing than are physical risks, at least in the short to medium term. Despite this, transition scenarios can be constructed using similar thinking as that used by the CMSI.

A process to build a scenario for transition might follow this illustrative process:

- Identify potential actions by governments, regulators, shareholders, and other stakeholders which would affect the macroeconomic environment in which a firm operates.
- Designate timeframes over which the actions may materialize.

- Describe specific national policies, such as:
  - Net zero carbon emissions is targeted by 2050;
  - Thermal coal is phased out for power generation by 2040;
  - Electric vehicles are x% of fleet by 2040; and
  - Carbon taxes are levied on air travel beginning in 2030.
- Identify demographic and macroeconomic shifts, such as:
  - Areas likely to gain or lose population (with rough quantification);
  - Areas and sectors likely to experience higher/lower economic activity (e.g., mining down, services up); and
  - Specific industry examples relevant to the firm – for example, international tourism falling by 20% due to carbon taxes on air travel while domestic tourism increases by 15% would be relevant if the firm were a travel insurer.
- Translate these overall goals into specific actions for the insurance sector and/or firm, such as (note that this list is intended to be illustrative and does not reflect any endorsement of these actions by the authors):
  - Divest thermal coal investments in line with sector decline, towards a stated target date.
  - Withdraw from underwriting solid fossil-fuel extraction beyond a stated target date.
  - Develop new insurance products for wind farms.
  - Develop new insurance products for electric vehicles.
  - Develop affordable and robust insurance for net-zero-carbon-emitting enterprises.
  - Engage in initiatives which fill protection gaps, and review the future business mix.
  - Retool travel insurance to focus on evolving travel patterns.
- Identify risks and opportunities for the firm, such as (note that this list is illustrative and not intended to be exhaustive):
  - The risk of increased morbidity or mortality from heat stress, particularly for vulnerable populations, which could lead to higher claim costs;
  - The risk to supply chains, loans, and leasing finance as businesses transition;
  - New products for “green” reconstruction; and
  - New markets for services, such as “green” superannuation fund offerings.

Once these topics are reviewed and categorized, scenarios can be constructed, risks/opportunities assessed, and disclosures made. Projections of key metrics, such as renewal of contracts or future business mix, can be made. Multiple scenarios should be constructed to illustrate the range of plausible future states. Importantly, transition effects carry an inherently high level of uncertainty which should be reflected in strategic planning, considering differences in the degree of effects and their timing. This implies that plans should stress agility and be subject to periodic review, as outlined in Section 4.

## 1.4 Legal and Reputational Risks

LRRs have characteristics similar to those of transition risks, in that they may emerge rapidly, reflect the local legal environment, and have a high level of uncertainty. Of the types of risks discussed in this section, these are likely to be more manageable for many firms in sectors like insurance, in the sense that they fall largely under the control of the firm, through the choices it makes, and the risk controls it employs. However, the severity of these risks may be material for certain firms if they fail to manage exposure to climate-related risks in a manner deemed appropriate by regulators, shareholders, members (in the case of mutual companies), beneficiaries, the public, or other stakeholders.

### 1.4.1 Legal Risk

Climate change brings challenges which may give rise to litigation against companies.

Grounds for legal action may exist if a firm fails to adapt its strategy, actions, and/or external reporting to properly recognize and address the risks arising from climate change. This legal exposure may extend to its advisers. In some cases, legal risks can be very high, particularly for financial services firms which have significant business relationships with producers of GHG emissions through loans, investments, financial services, or provision of insurance coverage.

Liabilities may arise not only to shareholders and creditors, but in some cases to trading partners and customers. The need for adequate disclosure is critical, and the definition of what is adequate is evolving. There may be sudden shifts in what is considered acceptable corporate behavior in terms of a firm's contribution to mitigating or exacerbating climate change.

Financial services firms face risks particular to that sector. Insurance coverage of another entity's liabilities has proven especially susceptible to risks that litigation may expand the previously accepted interpretations of contractual rights or liabilities for damages. It is now quite common for this to be influenced by government agencies, as was well illustrated during the COVID-19 pandemic – when, for example, the definitions of what constitutes "business interruption" were subject to strong challenges.

General insurance firms which underwrite Directors & Officers or product liability coverages may be exposed to latent liability for policies issued in the past which covered entities that engaged in fossil fuel extraction and production, much in the same way asbestos became a major issue in some countries in previous decades. There are growing numbers of lawsuits claiming damages for GHG emissions from a wide range of companies. Judgements in favor of plaintiffs in these cases could lead to exposure for insurers covering the companies by a variety of policy types.

Directors' duties around custodianship, market conduct, or product disclosure may also be interpreted more broadly. Investment selection and product labelling may be subject to a trend towards the broadening of custodial duties and heightened expectations of risk management. Each of these risks reflects growing community and government concerns over climate change and transition impacts.

### 1.4.2 Reputation Risk

Many of the legal risks mentioned in Section 1.4.1 may also give rise to strong customer reactions that may be damaging to a firm's financial performance, market share, and recruitment/retention of suitable staff.

The reasons for such actions are typically similar or related to legal risks, and might be expected to occur in parallel, and given the capabilities of modern communications systems and social media, large adverse consequences may occur suddenly.

A failure to anticipate or accommodate possible consumer reaction may also give rise to greater legal risks, since it may be seen as a failure of strategy.

As noted previously, the term "risk" should be understood to include both downside and upside outcomes. Reputation can be enhanced by taking actions which are viewed positively by stakeholders. For example, a firm which develops more sustainable products or practices may be rewarded with higher sales and customer satisfaction.

## 1.5 Other Sources of Information

The EIOPA published an Opinion[11] on the supervision of the use of climate change risk scenarios in the Own Risk and Solvency Assessment (ORSA). ORSA is an internal process undertaken by an insurer to assess the adequacy of its risk management and current and prospective solvency positions under normal and severe stress scenarios.

The Opinion showed the results of the information request conducted by EIOPA on the use of climate change scenarios in the ORSA. The body of the EIOPA Opinion is about mandating climate risk scenario analysis (or at least materiality assessment of the exposure), recommending the use of a 1.5–2°C scenario and a second, greater-than-2°C scenario. Then there are various appendices that are intended to help with how to perform such analyses in practice.

The quantitative analyses for physical risk found in the ORSA reports can be largely divided into four types:

- Physical risk with technical approaches that are not dissimilar to regular natural catastrophe scenarios. For example:
  - An increase in the loss ratio of 5% per year in non-life business affected by climate change, offset by loss-absorbency from any national insurance compensation arrangements; and
  - A widespread increase in windstorms that leads to an increase in claims in multi-risk lines of business, with a 30% increase in the loss ratio in the first year and 10% in the second year of the projection horizon.
- Physical risk linked to specific climate scenarios. For example:
  - Scenarios based on the Royal Netherlands Meteorological Institute climate change projection of increasingly intense hailstorms and periods of drought; and
  - Scenarios consistent with the IPCC's RCP 8.5.
- Physical risk on investment assets, considering a scenario over a three- to five-year period with prolonged droughts that negatively impact the value of residential property and hence the mortgage portfolio.
- Physical risk in combination with other risk factors:
  - A scenario with a severe weather event, which causes a significant increase in claims, followed by (unrelated) failure/default of a reinsurer; and
  - A scenario with a longer period of low interest rates combined with increases in the frequency and intensity of natural disasters due to climate change.

The quantitative transition risk analyses ranged from simple ones with generic parameters without tailoring to any climate-related investments to more sophisticated ones, such as:

- Assessment of the impact on investments of 1.5°C, 2°C, and 3°C climate scenarios from 2018–2033. Modelling is based on the United Nations Environment Programme Finance Initiative for stocks and bonds plus an in-house model for the property portfolio.
- Scenario analysis of the impact of an election resulting in a new government introducing swift legislation to ban diesel engines in major cities. The new government won the elections and is committed to mitigating climate change after significant storms and floods caused extensive damage.

The Opinion also details a mapping of climate change risks to prudential risks for non-life and life insurance in Annex 3 on pages 18–21, and Annex 4 on pages 22–25.

The EIOPA published the Second Discussion Paper on Methodological Principles of Insurance Stress Testing[12] in June 2020 in the process of enhancing its bottom-up stress-test framework. The paper proposes an approach that starts from the assessment of insurers' vulnerability using their current exposure (micro-dimension), followed by a forward-looking assessment of potential changes in business models and the implications on policyholders and any spillover to the other markets (macro-dimension).

In addition, the discussion paper covers guidelines on multi-period approaches to stress testing using an iterative calculation/validation process, focusing on how to treat future business and reactive management actions over the periods of the stress test. However, multi-period approaches incur high costs, so a cost–benefit analysis should be performed before starting such an exercise.

The ACPR published a provisional hypothesis of the climate change pilot exercise in May 2020,[13] which contained several scenarios that have been tested by nine banking groups and 15 insurance groups. The pilot exercise included a macroeconomic projection of the Eurosystem, which has the impact of the COVID-19 pandemic as a starting point, plus the transition scenarios published by the Network for Greening the Financial System. The main assumptions and parameters of the reference and adverse scenarios can be found in Section 3 of the ACPR paper.

The Bank of England was planning to conduct its Climate Biennial Exploratory Scenario (CBES) for banks and insurers in June 2021. The CBES would explore transition, physical, and litigation risks, with three climate scenarios: early policy action, late policy action, and no policy action. Scenario specifications can be found in Section 4 of the Bank's discussion paper.

The Bank of England released a report[14] that set out a six-stage framework that general insurers can use to manage and report exposure to physical climate risks related to extreme weather events. The six stages are: identify business decisions, define materiality, conduct background research, assess available tools, calculate impact, and reporting and action.

## 2. Actuarial Considerations

The previous sections have introduced the basic concepts of climate-related risks and constructing scenarios, and provided illustrative considerations in assessing transition risk. This section discusses the issue of how climate-related risks can affect actuarial work, using the process of Appointed Actuaries preparing FCRs as a guide.

Actuaries are frequently involved in many aspects of a financial institution's operations, including risk management, valuation, pricing, reinsurance, preparation of financial reports, etc. The Actuaries Institute Australia Information Note[15] on climate-related risks for Appointed Actuaries preparing FCRs provides a comprehensive example of the various things an actuary might consider when assessing a firm's exposure to climate-related risks. Some of the key

issues identified in the Australian Information Note are highlighted below. While this material is specific to Australian actuaries, its principles are applicable globally. Some additional relevant guidance materials from other jurisdictions are summarized in Section 2.2.

These examples are offered for illustrative purposes to provide readers with a framework to understand the range of what various global actuarial organizations are identifying as best practice in their jurisdictions or for their members at the time of writing. The IAA makes no assertion that such practices are applicable outside of this context.

## 2.1 Actuaries Institute Australia Information Note for Appointed Actuaries

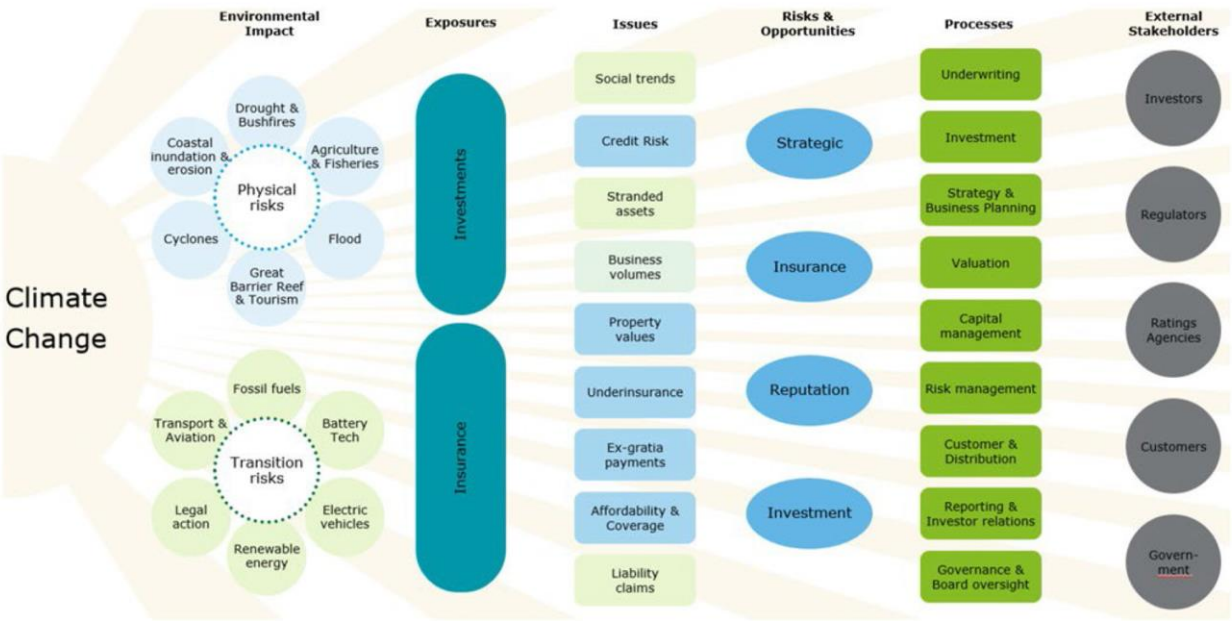
As noted above, all references in Section 2.1 to actuarial practices reflect what the Australian Institute recommends for its members and as such is illustrative of good actuarial practices. Not many jurisdictions have adopted climate-related actuarial guidance to date, but it is expected that many more will do so in the future.

Consideration of climate-related risks is increasingly a part of the management of risk for any financial institution. A comprehensive ERM framework should therefore include climate-related risks and other accelerating risks such as cyber and technology. The Australian Information Note identifies four ways an actuary can assess a firm in the context of its ERM framework. Does the institution and its management team:

- Have appropriate governance and leadership to address climate-related risks?
- Understand the financial and strategic risk associated with climate change?
- Have an effective plan or strategy to assess and address climate-related risks?
- Have a process to evaluate customer considerations and reputation risk?

The Note discusses the issues that actuaries should consider in the assessment of climate-related risks. The diagram below shows how climate-related risks affect various insurance processes for financial firms. The remainder of this section summarizes relevant content from the Note.

**Figure 1 – Climate-Related Risks and Insurance Processes**[16]



A key aspect of an Appointed Actuary's review involves an assessment of the firm's approach to capital management, especially its ability to continue attracting capital. Appointed Actuaries should consider allowing for uncertainties associated with climate change within the stress margins for insurance risk and target capital.

Stress tests and scenario analysis are important tools for assessing capital adequacy. Appointed Actuaries should comment on the appropriateness of these tests in relation to climate-related risks, considering, but not being limited to, the following:

- Time horizon of stress tests should be longer than that of a general stress test, which in the Australian case is three years – the time horizon could be longer for physical risks and shorter for market, transition, and legal and reputational risks as these emerge more quickly;
- The ability of existing natural hazard models to forecast potential climate change impacts (presented separately) may be especially challenging, as historical data is limited to the past or existing climate and less volatile weather;
- Whether recent historical claims costs reflect potential physical climate-related risks;
- Whether the nature of the hazards insured, or premium written, by an insurer is materially impacted by expected technological or regulatory changes driven by responses to climate-related risks;
- How climate change issues are likely to affect the value of, or returns from, investments, over both the short and long terms;
- Shifts in geographic distribution of natural hazard and health risks due to climate change; and
- Whether management actions identified are precautionary measures or responses to the scenario if it were to occur.

### 2.1.1 Reinsurers

The existence and types of ceded reinsurance used are other important considerations, as climate-related risks can affect the availability and price for reinsurance over the medium to long term. Insurers and reinsurers should also consider credit-rating targets, as major rating agencies are increasingly including climate-related risks in their credit-rating determinations. Reductions in ratings could impact the amount of capital a firm is required to hold for maintaining reinsurance balances.

### 2.1.2 Investment Management

Insurers and pension funds have the fiduciary duty to address financial and strategic risks, including climate change. This is particularly relevant as both insurers and pension plans have long-term investments. Accordingly, company directors need to carefully consider climate-related risks and make appropriate disclosures to reduce the climate change liability risk.

Actuaries also should assess the appropriateness of a firm's investment strategy, considering the company's liabilities. Climate change and decarbonization will impact the value of investment portfolios, creating positive and negative outcomes for different classes of investment. Directors and senior management may also be liable for how climate-related risks and other Environmental, Social, and Governance (ESG) issues are considered in long-term investment strategies.

There are several investment challenges involved in incorporating climate change in an assessment of an investment portfolio in terms of:

- How the timing and impact of climate change effects are affected by politics and response paths;
- The quality and extent of climate risk information on companies and securities;
- The capability of models to appropriately consider possible extreme events and climate tipping points – for example, sudden changes to physical risks, legislation, or sentiment;
- The suitability of current macroeconomic assumptions about growth, interest rates, and inflation due to the systemic nature of climate tipping points; and
- The impact of climate-related risk and decarbonization on supply chains.

In terms of measuring risk and returns, traditional risk/return indicators are complicated because returns are not only driven by GHG intensity but also industry structures, product constraints, the adaptability to alternative policy environments, and consumer sentiment. Calculating appropriate risk-adjusted returns requires consideration because there is a difference between integrating climate-related risk ratings into the investment process compared with actively screening out individual securities. In addition, there is a need for actuaries to become more familiar with non-financial information to integrate it into the risk assessment.

It is important for firms with long-duration assets or liabilities to perform stress testing using alternative and multiple climate change scenarios and government responses. Scientific literature such as the IPCC's 1.5 Degree Report[17] can provide guidance to actuaries regarding the expected timing of policy responses and technological and behavioral change. Under the IPCC's 1.5 Degree scenario, achieving net zero emissions will take decades, so actuarial considerations should include transition risks viewed over a longer time horizon:

- Heightened risks of stranded assets associated with certain infrastructure and capital-intensive industries; and
- Meeting customer expectations, as transition risks can particularly impact their pension balances during the accumulation and payout phases of their policies.

In addition to stress tests, Appointed Actuaries should consider:

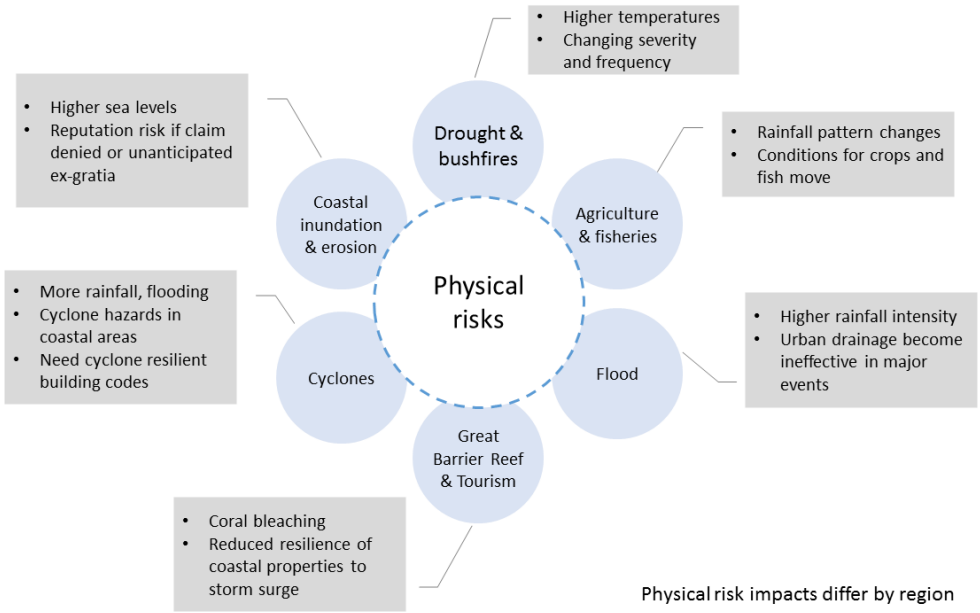
- Portfolio exposure to potentially stranded assets and those assets that can benefit from transition policy;
- Portfolio risks changing over time – that is, not being static;
- Possible climate tipping points for longer-term investment horizons;
- Including a "shadow" carbon price to reflect transition costs due to changes in technology, behavior, and policy responses;
- Keeping the assessment of climate change impact on the investment portfolio consistent with that on the business and its customers;
- Establishing a decision-making framework to reposition the portfolio in response to different policy outcomes and physical shocks;
- Establishing criteria for fund manager selection with respect to management of climate change risks; and
- The impact of climate change on liability duration, volatility, and uncertainty.

The Note then goes on to discuss some specific issues actuaries may face in general, life, and health insurance. Overall, Appointed Actuaries in Australia are required to comment on the adequacy of premiums, product design, and reserving. The next few subsections go through the specific considerations for general, life, and health insurers.

### 2.1.3 General Insurers

General insurers are exposed to physical risk through claims on insured events and through investment values on their asset portfolios and the assessment of credit risk. The diagram below shows examples of physical risk impacts for general insurers.

**Figure 2 – Physical Risks**




Physical risk is also relevant to workers' compensation claims because climate can affect mortality and morbidity risks at work. An example is heat stress from working outdoors during heat waves, or sickness from working outdoors during high-pollution days, without appropriate protection being provided.

Transitioning to a low-carbon economy involves policy, legal, technological, and market changes. Actuarial considerations for general insurers include:

- New technologies, such as battery-operated cars and autonomous vehicles, and how these will present insurance-pricing and product-design issues;
- Shifts in types of industries that may require changes in products or coverages underwritten; and
- Growth and contraction of economic sectors that can affect the insurer's premium revenue.

Some general insurers also write Directors & Officers and Professional Indemnity insurance contracts. Liability risks can arise from these contracts due to a firm's failure to address financial and strategic risks via mitigation, adaptation, or disclosures.

Australian Appointed Actuaries are required to include an assessment of pricing, including the adequacy of premiums, which incorporates climate change risk. A similar requirement exists under Solvency II regarding the actuarial function, which must express an opinion on the appropriateness of the overall underwriting policy. Since general insurance products are mostly annually renewable contracts, they have two means to mitigate excess losses: first, the insurer's risk is limited as they can reprice or refuse to renew their policies annually, and second, natural hazard prices and product design can be reviewed and recalibrated frequently using the latest science and experience. However, affordability and/or availability pressures

can emerge as risk shifts, so Appointed Actuaries need to consider regulatory and reputational risks when premiums increase or coverage is limited.

The Information Note also indicates Appointed Actuaries should be aware of and should comment on:

- Leading indicators[18] that prompt pricing to reflect climate change risks;
- Regulatory and legal changes that can emerge rapidly over short timeframes; and
- New products and product designs that are being developed, and other industry developments.

For reserving, many physical risks will be known at the time of loss; for example, a hailstorm. Under some long-tailed lines like workers' compensation, claims will take longer to develop, and new sources of risk can emerge. Reserving methods may be affected by changes in claim payment patterns, which can be difficult to detect from historical data.

Natural hazard catastrophe modelling needs to be adjusted to expand beyond replicating historical weather patterns. Actuaries should consider:

- Capturing the current climate-related risks as much as possible in underlying assumptions, noting that it is challenging if long-term averages are used to estimate the frequency and size of infrequent events;
- Segregating climate change effects by geographical areas;
- Updating exposures in the models used to the current state – for example, building updates and regulations;
- Allowing for factors other than direct damage, such as demand surge and business interruption;
- Considering non-linearity or step changes that impact climate-related risks;
- Developing scenarios and estimating metrics for transition and liability risks; and
- Analyzing different time horizons for different applications, as illustrated in the table below.

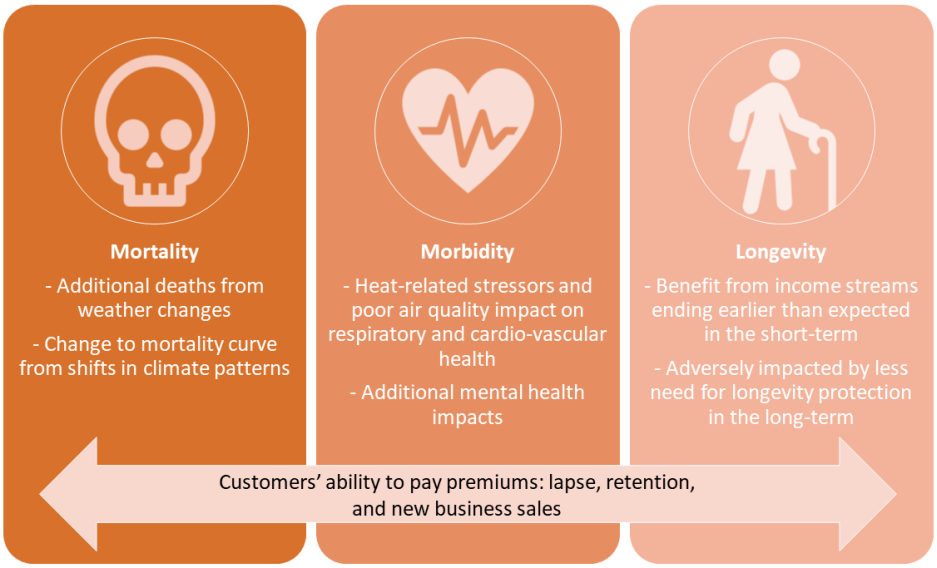
**Table 5 – Analyzing Different Time Horizons for Different Applications**

| Time horizon | Applications | How to adjust natural hazard catastrophe model |
|---|---|---|
| Short term | Annual pricing and valuation | Use current climate-related risks with small annual increments |
| Medium term | Portfolio steering | Sensitivity testing with trend or step change in parameters |
| Long term | Capital position<br>Rebalancing business | Sensitivity testing under different climate scenarios |

### 2.1.4 Life Insurers

Physical risks impact claims arising from mortality, morbidity, and longevity risks. The diagram below shows examples of how life insurers may be impacted in these areas.

**Figure 3 – Impact on Mortality, Morbidity, and Longevity Risks**




While the diagram offers examples of how risk can increase, of course examples could be constructed where risk decreases, such as milder winters making exposure to seasonal flu or frostbite less likely. Further, there are many other possible effects, such as vector-borne diseases (e.g., malaria or Zika) or stress on healthcare delivery systems.

Transition risk will be triggered by (among other things) the shift towards a lower-carbon economy, which in turn may drive widespread changes, particularly in sectors highly reliant on fossil fuels. These changes may lead to impacts on claims costs, risk exposure, and asset values. For example:

- A disorderly transition may cause disruptions to job stability in some sectors and could result in claims arising from mental health. There is much evidence that becoming unemployed has an adverse impact on mental health.
- Consumer preferences shifting away from carbon-intensive products and processes may exacerbate changes in industry and unemployment rates.
- New technologies could lead to growth in other industries involved in renewable or sustainable products, bringing about potential offsetting impacts to shrinking industries and short-term uncertainty to current occupation ratings.
- Due to the significant investment management function of life insurers, transition risk due to climate change will impact investment portfolios as decarbonization proceeds, creating positive and negative outcomes (e.g., stranded assets) for various classes of investment.

Given the long-term nature of many life insurance products (due to their guaranteed renewability), and the sensitivity of mortality and morbidity rates to unemployment and mental health, transition risk may have more material impacts on a life insurer's risk profile than physical risks in the short term.

Consequently, actuaries should consider identifying and quantifying climate-related risks, changes to underwriting, and regulatory changes in their pricing and product design. Actuaries should also consider data availability, accessibility, and model improvements to enhance and support pricing. Although life insurers may be able to reprice as a risk-mitigation strategy, there are challenges associated with repricing that actuaries should consider:

- Climate impacts for people already receiving claim payments, especially long-term benefits;
- The affordability of revised premiums and policyholder dividends, if applicable; and
- Shock lapses and anti-selection.

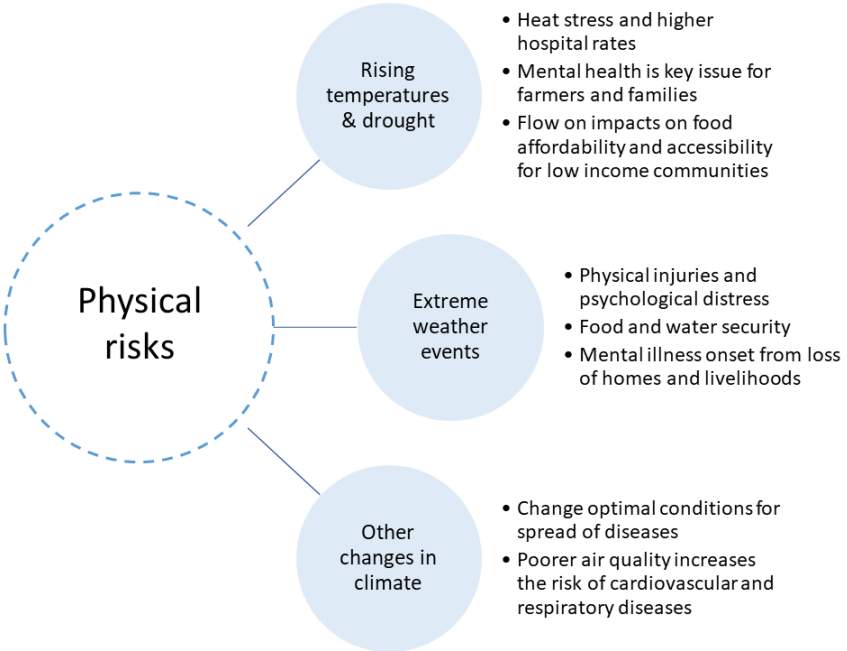
Setting best-estimate assumptions with climate change risks is difficult due to the uncertainty around the long-term nature and severity of climate change impacts. Appointed Actuaries could adjust industry tables due to specific characteristics of their insured lives, or adjust best-estimate and risk-margin assumptions due to the existence of a new risk factor.

### 2.1.5 Health Insurers

Appointed Actuaries should also communicate to the board how climate change is an additional source of uncertainty in future assumptions (e.g., mortality, morbidity, and investment). Stress testing and scenario analysis (also recommended by the TCFD) can help with this communication.

Physical risks of climate change can have direct impacts on the healthcare system and place indirect costs on a health insurer. The diagram below shows the links between physical risks and health outcomes.

**Figure 4 – Physical Risks and Health Outcomes**




When changes in population health outpace the adaptations made to health systems, upward pressure on costs to the healthcare system and increased insurance premiums may occur over the long term. Health insurers should therefore consider how the health insurance system will transition, so that their product offerings continue to meet changing health needs. A significant transition risk can be disruptions to job stability (unemployment), which can increase physical and mental health claims incidence.

In many countries, health insurance is community-rated (at least to some extent). It is also periodically renewable/repriced. Actuaries should consider the potential for both adverse and beneficial trends and how long these trends are expected to evolve. For example, potential considerations include both the spread of diseases enabled by hotter conditions and fewer pollution-related diseases due to energy transition. Actuaries should also consider the risk of

extreme events and be wary that past data may underestimate the severity or frequency of future extreme events. It may be appropriate to consider adjusting for this bias in pricing.

Given the interaction of health insurance and the broader society, actuaries need to consider certain macro issues, such as:

- Government policy actions, such as heatwave- and flood-mitigation plans that can reduce the level of vulnerability to these climate-related hazards;
- The impact of climate change on public health and emergency response services – for example, how more frequent extreme weather events or emerging chronic conditions might impact the healthcare system; and
- The potential impact of migration or changing population locations on healthcare systems.

## 2.2 Other Actuarial Associations

The Institute and Faculty of Actuaries has published a number of useful guides on climate change for actuaries, including "Climate Change for Actuaries: An Introduction", "A Practical Guide to Climate Change for Life Actuaries",[19] and similarly titled documents for defined benefit pension actuaries and general insurance practitioners, all published or updated in 2019.

It is beyond the scope of this paper to summarize the many aspects of these guides. However, some highlights from two of them are relevant to the objectives of this paper.

For example, the general insurance practitioners' guide provides additional useful material on the nature of physical, transition, and liability risk as seen from the UK perspective. Further, it discusses the need for, and considerations involved in, modelling these risks for the short, medium, and longer term. The life actuaries' guide similarly provides information to support those integrating climate change considerations into their work. Most of the principles from the life guide are relevant to all actuaries.

The life guide refers to the implications of climate change as far-reaching, non-linear, correlated, and irreversible. As pointed out in the Australian Information Note in Section 2.1, the timing of these financial risks can arise over a very long period and is quite uncertain, often outside current business or governmental planning horizons. While the outcomes are highly uncertain, many types of climate change risks are foreseeable. That is, there is a high degree of certainty that financial impacts from a combination of physical and transition risks will occur, although their severity, specific location, and timing are uncertain. Further, impacts can occur in many metrics, including best estimates, trends, and volatility.

Some practical steps that actuaries should consider in addition to the ones from Section 2.1 are:

- Recognizing the high level of correlation between climate change risks;
- Developing disclosure of approaches to climate change risk so that this is integrated into the insurer's risk and business planning;
- Raising awareness and risk identification – for example, logging climate-related risks on the risk register;
- Analyzing qualitative aspects of scenarios with alternative potential future paths for climate change and societal response, possibly inspired by narratives from the CRO Forum[20] or the TCFD Knowledge Hub;[21]

- Formalizing strategic actions and the insurer's ability to respond to potential future outcomes in risk assessments; and
- Monitoring best practice and techniques in the quantification of the insurer's exposure to climate-related risks and opportunities.

The TCFD framework, as discussed in Section 1, is relevant to actuaries who support the disclosures made by the organization they work for. Actuaries also need to understand the disclosures of other companies that the firm might invest in or have a counterparty exposure to. Therefore, actuaries should not only be familiar with their organization's Corporate Social Responsibility and sustainability initiatives, but also understand the climate-related risk management framework of their organization, clients, suppliers, and other stakeholders.

Actuaries should include climate-related risks within the firm's ERM process, proportionate to the nature, scale, and complexity of the insurer and its risks. A risk identification grid may be helpful to assess the potential climate change risks to which the insurer is subject. It is important to distinguish between shock (or "acute") and trend (or "chronic") impacts. The life guide shows an example of how to lay out such a grid on its page 16:

**Table 6 – Example of a Risk Identification Grid**[22]

| Risk Class | Physical | Transition | Liability |
|---|---|---|---|
| **Market** | Yes | Yes | Yes |
| **Longevity** | Yes | Less material | No |
| **Mortality/Morbidity** | Yes | Less material | No |
| **Lapse** | Less material | Yes | No |
| **Counterparty** | Yes | Yes | Yes |
| **Operational** | Less material | Yes | No |
| **Strategic** | Yes | Yes | Yes |
| **Reputational** | n/a | Yes | Yes |

This table adds operational risk to those risks discussed in the Australian Information Note. The nature and effects of extreme weather events (physical risk) can vary by geography, so an insurer's exposure is linked to its geographical presence. Insurers with a global presence or with significant outsourcing may be more prone to business interruptions (operational risk) in countries that do not have appropriate infrastructure in place.

The UK Financial Reporting Council noted that actuaries should be aware of systemic risks and the risk of groupthink, which may discourage the widespread use of a small range of models and parameters where there is actuarial collaboration. This risk can be mitigated by collaborating with other professionals and getting multiple views from, for example, consulting firms or reinsurance companies, to encourage robust independent challenge and reviews.[23]

The Canadian Institute of Actuaries published a research paper in 2015, "Climate Change and Resource Sustainability: An Overview for Actuaries".[24] This paper noted that climate change can also provide insurance opportunities that actuaries can get involved in and so should be considered for scenario applications. It has been updated through a subsequent paper published in September 2019 entitled "Time to Act: Facing the Risks of a Changing Climate".[25]

The Society of Actuaries published the "Climate, Weather, and Environmental Sources for Actuaries"[26] report in 2017, which contains data, analysis, and discussion sources pertaining to climate change, environmental risks, and weather. The report also contains case studies and surveys on what the insurance industry is doing and disclosing. For each of the sources/analyses/discussions presented, the report highlights potential applications for actuaries in each source, which makes this report a very useful resource for actuaries wanting

to know how to manage climate-related risks. The Society of Actuaries has also published a series of educational notes regarding various aspects of climate change that might provide useful insight into the issues involved.[27]

Actuarial organizations around the world are rapidly developing important guidance and relevant information for practitioners. Other groups, such as the regulatory bodies noted in Section 1.5, are also producing useful guidance. There will likely be additional resources available between the time this paper is published and when it is refreshed by the IAA. Readers are encouraged to investigate contemporary sources for updated material of the type outlined above.

## 3. Considering Interactions and Systematic Issues

When actuaries consider scenarios or how firms may be affected by various types of climate-related risks, they should also consider the broader social, economic, political, and technological environment in which the firm operates. A useful tool to accomplish this is known as "systems thinking".

In the TCFD's October 2020 "Guidance on Scenario Analysis for Non-Financial Companies",[28] two types of scenarios are described:

- Exploratory scenarios, which are intended to be used to explore a range of alternative plausible futures. They are considered useful for testing strategies for resilience, as they provide a diverse set of plausible future states. Stress tests could fall into this category, where only the "tail risk" scenarios developed and analyzed are the stressed ones; and
- Normative scenarios, where future outcomes are set from which the pathways that are likely to lead to them are plotted. These types of scenarios are often used with assessment of targets and implementation plans. Reverse stress testing, where the scenarios and circumstances which make a business model unviable are identified, is a variant of this approach.

For climate-related risk scenario analysis involving chronic and acute events, it can be tempting to refer to the IPCC reports and try to map outcomes such as sea-level rise, hurricanes, and droughts onto:

- Liabilities
  - In the case of an insurer, exposures of its lines of business in the respective region; and
  - In the case of a pension fund, mortality and morbidity rates plus longevity and disability assumptions.
- Assets
  - In the case of an insurer or pension fund, how respective financial markets or the valuation of instruments are expected to behave.

However, following this approach may miss several crucial aspects of risk, including the:

- Implicit assumptions that, for example, financial markets, healthcare systems, supply chains, and communication links will be functioning at the level required in those scenarios;
- Inherent assumptions in the modelling approach taken which are used to estimate the value of assets and liabilities, and on which the scenario will be overlaid;
- Importance of the sequencing, correlation, and cascading of effects;

- Path and impacts of climate-related risk on critical infrastructure that led to the outcome – this is especially important in determining the resilience and costs of the impacts;
- Extent of correlation of the value of assets with liabilities (climate-related risk is a key asset/liability matching issue); and
- The possibility that actions by one firm to address its climate-related risk may create risk for another.

An example of the last point above could involve the interaction of insurers and mortgage lenders in response to more frequent extreme events. Property insurers could mitigate their financial risk by raising prices, but that might have an adverse effect on mortgage lenders in terms of the ability of their borrowers to replay loans. Mortgage lenders might react by reducing loan offerings in high-risk areas, affecting the pool of customers for the property insurer.

The TCFD's October 2020 Guidance document provides a framework for addressing the two types of scenario analysis. What is needed for both is a broader view of the entire system in which the firm operates. This can be referred to as systems thinking or systems dynamic modelling, and provides important information to enrich the scenario narrative.

Following this approach can assist the firm with thinking about the interconnectedness inherent in complex systems like a modern economy, such as political fragility, the economic and legal landscape, the state and quantity of natural resources, mitigation and adaptation efforts underway, and the environment. It can also assist in deriving values for the variables needed for estimation of impacts of these scenarios. For example, systems thinking would help both types of firms described above anticipate how the system might react to their actions.

However, caution and rigorous thinking will be needed when utilizing these variables in models or other calculations, as they inherently include implicit assumptions, at least some of which might be inconsistent and even incompatible with the scenario outcome, pathway, or analysis.

If such an inconsistency arises, it is necessary for actuaries to, at a minimum:

- Be familiar with the limitations as well as inherent assumptions used in applying these and other modelling techniques; and
- Be aware of alternate forms of modelling which do not have these limitations, and be prepared to consider their suitability, given the question being asked and the purpose to which it is being put (a discussion of which is beyond the scope of this paper).

The TCFD October 2020's Guidance describes scenario storylines:

> Scenario storylines link historical and present events with hypothetical futures by presenting a seamless and integrated narrative describing the causal train of events (pathways) and underlying drivers, assumptions and affected systems.[29]

Systems thinking can be helpful in both types of scenarios cited at the beginning of this section. From the viewpoint of exploratory scenarios, this includes resilience testing. From the viewpoint of normative scenarios, this includes plotting the pathways that could have led to that scenario outcome.

This approach is consistent with that of many well-respected experts, including Nassim Nicholas Taleb, the author of *The Black Swan*. He and others have advanced the theory of fragility, which refers to the observation that systems which are occasionally stressed become resilient, while systems that suppress volatility become fragile. Thinking of climate-related risks in terms of resilience or fragility of a system can provide valuable insights into the risk of major disruptions.

Considering complex systems and the broader socioeconomic environment is also an important reminder that developing and applying scenarios requires actuaries to operate in multi-disciplinary teams that contain expertise in diverse fields such as macroeconomics, history, and social science. This supplements more traditional areas of non-actuarial expertise in climate-related risk work, such as natural perils and climate science.

## 4. Updating Scenarios and Integration with ERM Frameworks

Scenarios may involve macro-level views of future conditions which may not materialize for decades. Whenever one uses such long-range forecasts, it is important to include short- to medium-term "signposts" so that it will be clear if prerequisite steps are being completed for a scenario to be viable. For example, if a scenario is developed for a country that intends to reach net zero by 2050, the following signpost questions could be appropriate (these are examples only):

- At what point will the vehicle fleet be required to be electric, or hydrogen-powered?
- What is the target for the number of suitable charging/refueling stations? By when?
- Will related infrastructure keep pace and how is this measured?
- Will legislation be passed to raise the minimum energy-efficiency requirements of buildings or force the implementation of effective land-use practices? If so, when?
- What are the annual targets for renewable power in the electric grid? Are there any grid constraints that could limit the uptake of renewable power? If so, when will these be overcome?
- What targets exist for conversion of electric grids and installation of smart grid devices?
- Will carbon taxes be implemented? If so, when? How will they be implemented, and will there be social justice offsets?
- Will some subsidized biofuels (e.g., ethanol) or fossil fuels (e.g., diesel) be phased out? If so, when?
- What recycling targets and circular economy initiatives exist and how will they be executed and monitored?
- What changes in agricultural practices can be achieved on what timeline? How will agricultural land compete with land-based carbon offsets?
- Does the scenario rely on Carbon Capture and Storage technologies that impact the risks and uncertainties?

A list of questions like these can inform a host of management decisions affecting a financial institution. For example, if an entity's investment policy calls for targets for low-carbon investments, responses to questions like these can help identify whether such investments are likely to encounter difficulty and should form a basis for one or more scenarios.

If short- and medium-term targets derived from questions of the type noted above are consistently missed (or exceeded), then scenarios can be adjusted periodically to reflect new information. Breaking down long-term forecasts into smaller steps with measurable outcomes can assist with the integration of scenario analysis into a firm's overall ERM framework.

In addition to building a framework to monitor and adjust scenarios periodically, firms will also need to integrate scenario analysis more broadly into ERM frameworks. This will include

blending stochastic financial modelling and scenario analysis into a coherent set of tools to facilitate risk management in a firm.

Firms can also apply a bottom-up method to implement the scenarios:

- Consider every aspect of the scenarios for each process of the firm, such as policy management, accounting, claims management, and so on;
- Consider the impact the scenarios could have on each process; and
- Test the ERM framework to evaluate whether processes are sufficient.

A broader process to capture emerging and developing risks may be needed. Since there will always be uncertainty regarding the future, no future scenario has a 100% probability of materializing, just as no one specific financial forecast in a financial analysis can capture the variability in possible outcomes. Thus, a process to assess the probability or likelihood of various future states outlined in scenarios and to understand how they affect a firm's decision metrics should be developed and followed.

All models have some limitations on what they do and do not allow for. It is critical to understand such limitations and adjust for them where practical. For example, a model used to forecast the change in flooding potential under a high-emissions scenario may have to consider not only the current flood-control infrastructure but also what may or should be planned. Further, the possibility that things like human error (e.g., not maintaining levees) may affect the assumptions underlying a hydrological model should be thought through. Issues of this type require that practitioners understand the assumptions and limitations of any models used and how external factors may affect the assumptions and resulting risk.

Finally, whether a scenario assumes a static or dynamic set of actions by a firm can be important. While it is likely a firm will adjust its business strategy to react to its evolving environment, it can also be useful to consider a base scenario where it does not react (a static case) in order to understand its exposure to risk and how its actions change it.

# 5. Case Studies

These three simplified case studies are intended to be illustrative and not comprehensive examples of complete scenarios, which would be beyond the scope of this paper. The focus in the case studies is on the thought process involved in identifying relevant information and assembling it in a way that would allow a firm to assess the risks and opportunities it faces. Readers should not focus on whether the details of the case studies (e.g., agriculture insurance) are applicable to their operations, but instead on how an issue can be examined and data organized.

## 5.1 Crop Insurance in an Emerging Country

This example considers the impact of climate change on agriculture insurance in India over the period 2025–2030 from the perspective of an insurer. Based on observed temperature trends and those projected from global climate model simulations, a mean global temperature increase of between 0.95°C and 1.2°C was estimated for the projection period 2025–2030, relative to pre-industrial times (1850–1900). This is equivalent to an average scenario of +1.075°C vs pre-industrial levels, so this scenario applies a chronic, instead of acute, climate hazard identified in Section 1.2.

In a future warmer environment, not only temperature but also other meteorological variables affecting agriculture (notably precipitation) may be different than today. In addition, climate change-induced biodiversity loss (e.g., bees, fish stocks) will also affect agricultural sectors such as fruit-growing and fisheries.

### 5.1.1 Climate Change Impact on Key Agriculture Perils

There is compelling evidence that temperatures in India have been increasing and that the observed and projected temperature increases can be largely attributed to anthropogenic forcing.[30] Temperature increase has a negative impact on yields of various important crops such as rice, wheat, soy, and maize.[31,32,33,34] This impact is the result of various biological processes described below:

- Heat stress (>35°C) affects flooded rice crops. Exposure to high temperatures for a few hours can greatly reduce pollen viability and, eventually, lead to yield loss.[35] For rice, every 1°C increase in temperature will reduce global rice yield by an average of 3.2% (± 3.7%).[36]
- Wheat is also affected by heat stress in various ways. Increasing temperature to 45°C for two hours seven days after germination in 10 diverse wheat genotypes led to reduced length and dry mass of shoot and root as well as decreased chlorophyll and a lower membrane stability index.[37]
- Soybean exhibits some sensitivity to high temperatures from the seed germination stage.[38] For example, raising day/night temperature from 29/20°C to 34/20°C during seed fill decreased soybean seed yield.[39]
- In a global study by Zhao et al.,[40] it was found that the largest loss in yield is observed for maize; every 1°C increase in the global mean temperature leads to a yield decrease of 7.4% (± 4.5%).

### 5.1.2 Climate Change Adaptation in Agriculture

Future crop yields will not only depend on climate change but also on the ability of global agricultural practice to adapt. Historically, agriculture has usually adapted quickly to changing environmental conditions; for instance, by planting different crops or varieties. Climate adaptation generally includes several elements: availability and adoption of new technology, application of improved farming methods, shifting cropping patterns, and improvements in public infrastructure. However, past benefits from improvements in agriculture technology and infrastructure do not guarantee that crop yields will continue to offset adverse effects of climate change in the future.

### 5.1.3 Methods and Data

The pricing approach for agriculture insurance in India is based on the recent history (10 years) of yield data, which is available for approximately one million location-crop combinations. The Indian government-sponsored crop insurance scheme (Pradhan Mantri Fasal Bima Yojana, or PMFBY) guidelines are applied to yield data to estimate loss costs on an annual basis. According to the PMFBY guidelines, a payout is made when yields are below a certain threshold. The threshold yield is calculated by taking the average of the best five of the last seven annual yields, multiplied by an indemnity level, which is location-crop-specific and can have values such as 70%, 80%, or 90%.

Before applying PMFBY guidelines to calculate annual loss costs, a detrending procedure is applied.[41] This means that the original yield data can be transformed to reflect current "as-if" yields, considering the possible presence of a yield trend.

### 5.1.4 Climate Change-Driven Trends of Major Crop Yields

The climate trends for various important crops in India are obtained in two articles.[42,43] The trend estimates found in the original articles have been scaled accordingly so that they correspond to the temperature increase scenarios described in the Introduction (low, medium,

and high trends; see the table below). These trends refer to near-term yield projections and relate to major producing areas in India for the respective crops.

**Table 7 – Country-Wide Annual Yield Trends (in %) Used for the Climate Change Scenarios**

| season | crop | low | medium | high | comment |
|---|---|---|---|---|---|
| Kharif | Paddy | -0.183 | -0.202 | -0.221 | |
| Kharif | Soy | -0.180 | -0.270 | -0.310 | Mall et al, 2004 |
| Kharif | Other | -0.128 | -0.142 | -0.157 | average of maize, sorghum, pigeonpea and groundnut |
| Rabi | Wheat | -0.187 | -0.212 | -0.237 | |
| Rabi | Other | -0.089 | -0.102 | -0.115 | average of barley, chickpea and mustard |

Based on the above trends adapted to our specific scenario, the climate change impact is illustrated in the calculation sheet below for one crop-location:

**Table 8 – Illustration for One Crop-Location**

| Current India Payout Estimation | | | | Current India Payout Estimation Under Climate Change Assumption | | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Yield | Threshold | Payout | Years until 2025 | Yield change for 2025 (perc) | Yield projection for 2025 | Threshold | Payout |
| 2009 | 300 | 528 | 43% | 16 | -4.621 | 286 | 512 | 44% |
| 2010 | 500 | 528 | 5% | 15 | -4.332 | 478 | 512 | 7% |
| 2011 | 400 | 528 | 24% | 14 | -4.043 | 384 | 512 | 25% |
| 2012 | 600 | 528 | 0% | 13 | -3.755 | 577 | 512 | 0% |
| 2013 | 700 | 528 | 0% | 12 | -3.466 | 676 | 512 | 0% |
| 2014 | 800 | 528 | 0% | 11 | -3.177 | 775 | 512 | 0% |
| 2015 | 200 | 528 | 62% | 10 | -2.888 | 194 | 512 | 62% |
| 2016 | 550 | 528 | 0% | 9 | -2.599 | 536 | 512 | 0% |
| 2017 | 450 | 528 | 15% | 8 | -2.310 | 440 | 512 | 14% |
| 2018 | 650 | 528 | 0% | 7 | -2.022 | 637 | 512 | 0% |
| mean | 515 | | **15.0%** | | mean | 498 | | **15.2%** |
| CoV | 0.358 | | | | CoV | 0.360 | | |
| mean 5 | 660 | | | | mean 5 | 640 | | |
| indem | 0.8 | | | | indem | 0.8 | | |
| threshold | 528 | | | | threshold | 512 | | |

*Notes:*

- "Mean 5" is calculated as the mean of the five best years over the last seven years.
- "Indem": According to the PMFBY guidelines, an 80% indemnity level is chosen for this example.
- "Threshold" is the indemnity level multiplied by the "Mean 5".
- "Payout" equals $1 - \frac{yield}{threshold}$
- For the climate change assumption, a 0.289% reduction of yield per year is assumed. With this assumption, reduced yield due to climate change can be estimated on an "as-if" basis.

In conclusion, under the yield-reduction assumption, the average payout for this crop-location will increase from 15.0% to 15.2%, which represents a negligible 1.3% increase. However, this increase relates to a projection for the period 2025–2030. Over this time horizon, adaptation

and risk mitigation are likely to offset the climate change impacts. But looking in a more distant future, the conclusions could be quite different.

## 5.2 Investing or Underwriting in a Region Dependent on Fossil Fuels: A Transition Example

To illustrate some of the concepts discussed in Section 1 regarding transition risk, here is an example of investments in assets or underwriting of insurance risk supporting a country heavily dependent on fossil fuels. The scenario is designed to facilitate risk management by a pension fund that invests, but is not itself based, in Qatar, or an insurance company underwriting assets (e.g., buildings, aircraft, ships, ports) based in or which operate in the country.

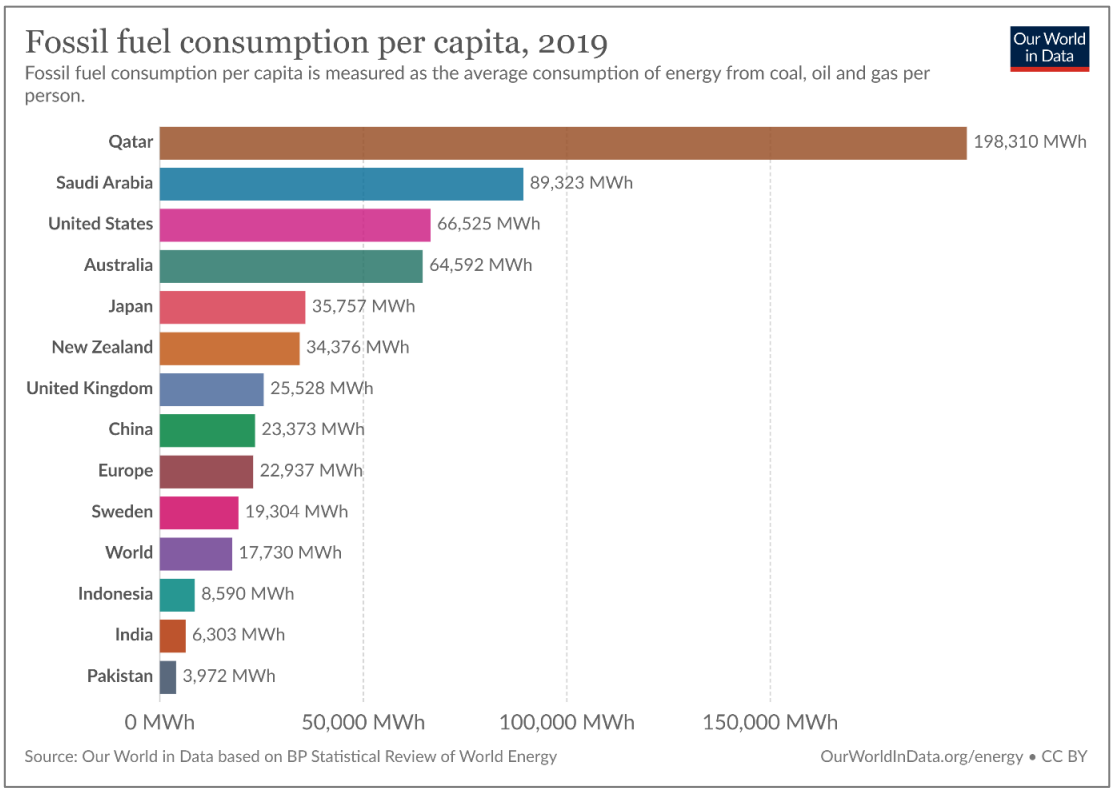
Section 3 introduced the concept of systems thinking. For purposes of brevity of illustration, not all aspects of systems thinking could be incorporated in this example. For example, in a fully developed scenario, it would also be important to consider additional aspects of population and workforce dynamics as well as the risks to political stability both regionally and domestically.

### 5.2.1 A Country Heavily Dependent on Fossil Fuels

What is the impact of transition risks that Qatar is expected to face because of transitioning to a low-carbon economy during the period 2025–2035, and what are the challenges this may pose for firms which have business interests there?

Qatar is a major producer and exporter of natural gas and oil, and its domestic oil and gas production entirely covers the country's energy needs. In 2019, Qatar's fossil fuel consumption per capita was the highest in the world, at almost 200MWh per person.[44]

**Figure 5 – Qatar's Fossil Fuel Consumption Per Capita, 2019**



Qatar's economic prosperity comes from the extraction and export of oil and natural gas. Exports from the oil and natural gas industries accounted for 38% of Qatar's GDP in 2019.[45] The next largest sector is the services industry.

Qatar has diversified into manufacturing such as flour milling. The manufacturing plants, however, rely on Qatar's own oil and gas resources.

Qatar has also promoted itself as a media centre through Al-Jazeera and a transportation hub through Qatar Airways. Qatar Airways has been active in promoting its environmental awareness, achieving a high-level certification from the International Air Travel Association's Environmental Assessment Program; is fully compliant with the European Union's Emissions Trading System; and participates in carbon offset programs.[46] By citing these activities, there is no judgement on Qatari actions, but simply a note that government and businesses in Qatar are attempting to address their environmental footprint despite the clear challenge that presents.

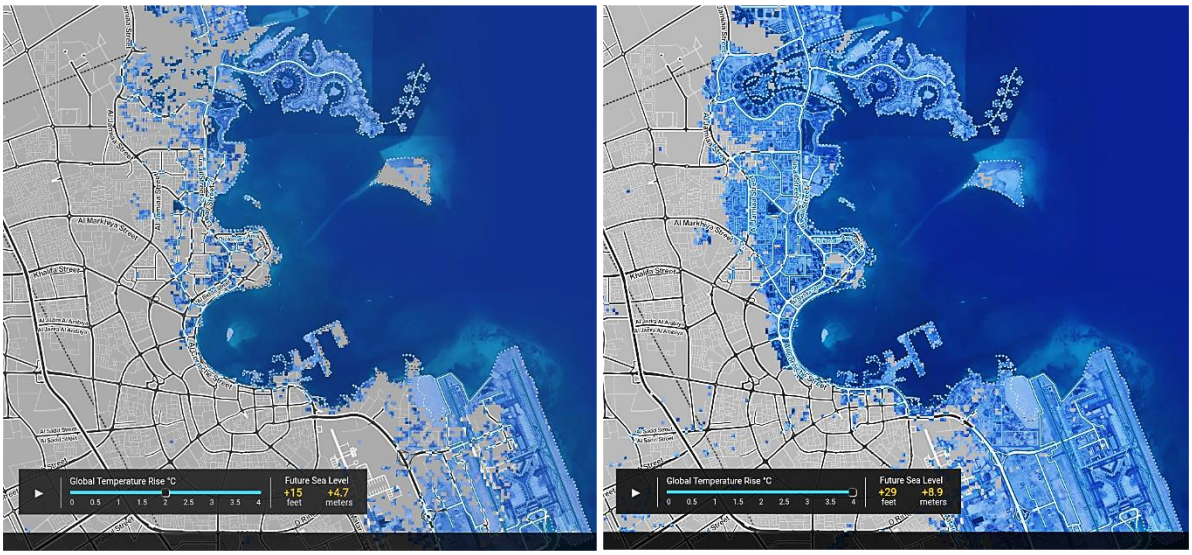
The scarcity of fertile land and water limits Qatar's ability to diversify into such sectors as agriculture. Fortunately, technology has helped Qatar overcome some of its land limitations; for example, by using treated sewage and desalinated water for irrigation. Qatar now produces and exports some fruit, meat, milk, cereal, and grains.[47]

### 5.2.2 Climate Change's Impact on Qatar's Economy

Qatar is in the Gulf region, which is characterized by an extreme climate, so a majority (80%) of its energy production is used for cooling services.[48] Around 92% of its population lives in the capital, Doha, a coastal city.

Due to Qatar's geographical location, the long-term climate change threat to Qatar's population is the impact on the sustainability of its economy, built environment, energy consumption, and energy systems.[49] Both images below show the Hamad International Airport and the Pearl-Qatar completely submerged underwater when projected long-term sea levels rise due to global temperatures increasing by 2°C and 4°C.[50]

**Figure 6 – Hamad International Airport and the Pearl-Qatar when Projected Long-Term Sea Levels Rise Due to Global Temperatures Increasing by 2°C and 4°C**




Climate change also poses an economic transition risk to Qatar as the country is heavily reliant on the exports of fossil fuels, which will be undergoing fundamental change. The International Monetary Fund's research team[51] projected that global demand for oil and natural gas will reduce due to:

- Slower population growth globally (1.1% in 2018 to 0.6% in 2046);
- Slower global GDP growth per capita (3.2% to 1.8% over the next decade) as emerging markets mature; and
- Accelerating improvements in energy efficiency and adoption of renewable energy sources.

The Qatari government recognizes these trends and has laid out a blueprint to diversify its economy to make it more self-sufficient and less reliant on gas and other natural resources.[52] The Qatar National Vision consists of four pillars, one of which is Environmental Development, which commits the country to invest in technologies which protect and conserve the environment. Despite these efforts, it will be extremely difficult for Qatar to achieve GHG emissions levels which will allow many investors and underwriters to continue activity in Qatar under their ESG guidelines. This may force such firms to re-evaluate their exposure to Qatar.

The next section discusses how a transition scenario can be constructed around the changes coming from national policies.

### 5.2.3 Scenario Construction

Table 1 in Section 1.1 illustrates that transition risk forecasts are highly uncertain and that actual outcomes will differ depending on technological, macroeconomic, and political conditions. Transition risks are influenced by the extent of global action, but acted upon locally through national policy, which contributes to the majority of transition risk. A relevant example is the developments in taxonomy for sustainable finance,[53] which could potentially allow Qatar to recognize its gas production as partially sustainable fuel for the EU. Such developments would affect Qatar's transition pathway to diversifying its economy to be less reliant on gas.

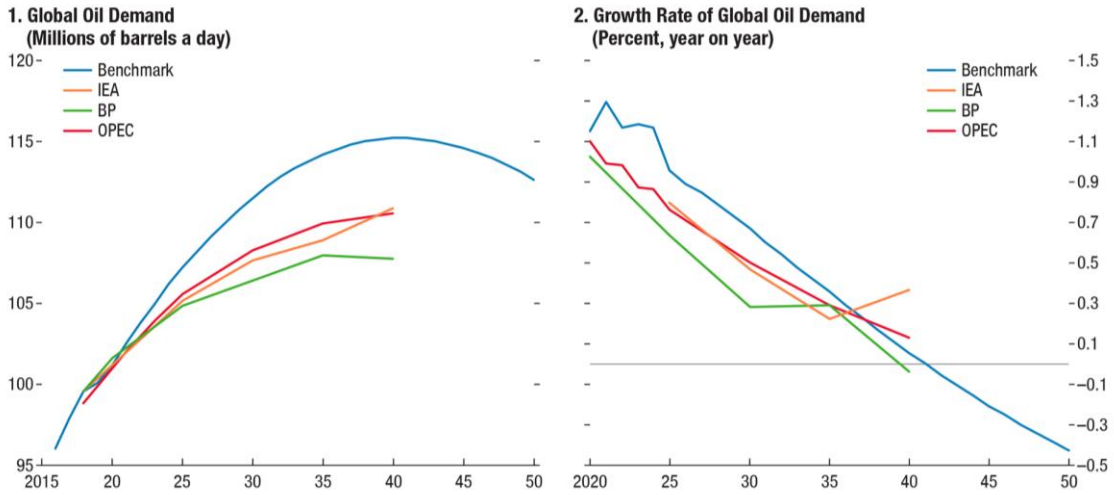
Measuring the impact of transition risks involves financial analysis of adaptation strategies using social and economic data. Methodologies used may be similar to current practice, although the scale of some changes may make the outcomes less reliable.

As outlined in Section 1.3, a transition risk scenario typically requires input such as appropriate transition pathways, designated timeframes, national policies, and demographic shifts. The end goal of the scenario analysis is to identify risks and opportunities and to set up or adapt a risk management framework to adequately accommodate the transition.

### 5.2.4 Designated Timeframe

In Qatar's case, the designated timeframe of the scenario is closely linked to the demand for oil and natural gas because its economy is currently highly reliant on these, both for exports and for domestic production and services. Energy institutions can provide guidance as to when the peak in demand for oil and natural gas is likely to occur. For example, the diagram below shows the different projections from British Petroleum (BP), the International Energy Agency (IEA), and the Organization of Petroleum Exporting Countries (OPEC), who envisaged a peak in oil demand around the year 2040.[54]

**Figure 7 – Benchmark Projection and Forecasts by other Energy Institutions**




Sources: BP (2019); International Energy Agency (2018); Organization of the Petroleum Exporting Countries (2019); IMF staff calculations.

The COVID-19 pandemic reduced fossil fuel consumption and may have brought forward the peak to be as early as 2028.[55] The IEA, in its October 2020 World Energy Outlook report, predicts that the demand for natural gas will first increase, as easy gains from coal-to-gas switching are largely exhausted by the mid-2020s. Prospects for gas start to deteriorate after that due to environmental considerations, competition from renewables, efficiency gains, and improvements in alternative low-carbon gases; for example, hydrogen[56] or ammonia.

### 5.2.5 National Policies, Transition Scenarios, and Macroeconomics

The table below summarizes the key national policies (Sustainable Development Goals, or SDGs) mentioned in the Qatar National Vision 2030 (QNV2030) that would be considered in developing a baseline transition (Planned Transition) scenario. The effects of such policies need to be quantified using economic and social data.

**Table 9 – Key National Policies (SDGs) in QNV2030**

| SDG | National policy | Consideration for scenario |
|---|---|---|
| 7 Affordable and clean energy | Increasing renewable energy; for example, through establishment of Qatar solar technologies | Increases revenue to offset loss from lower fossil-fuel exports |
| | Promoting energy and gas efficiency via National Renewable Energy Committee | Lowers expenditure on energy needs |
| | Improving rate of electricity and water per capita consumption | Reduces energy usage |
| 11 Sustainable Cities and Communities | Building of smart cities; for example, the Pearl and Lusail cities | Mitigates environmental impacts |

The concept of considering multiple scenarios was outlined in Sections 1.3 and 1.5 through the examples of scenario-development frameworks by various international bodies. In this case, it is useful to also consider an alternative scenario that takes into account the delay in

implementing and achieving the QNV2030 and other national policies that help economic transition. This scenario is referred to the Delayed Transition scenario.

Macroeconomic trends are a key input to building a transition scenario for investments in Qatar as they have a direct impact on the value of its assets and indirectly on risks (sovereign, currency, political, economic structure, and banking sector risks).

The Economist Intelligence Unit published a long-term economic forecast for Qatar in 2019[57] assuming bursts of high growth with gas projects in the 2020s followed by diversification and expansion of the services sector. The population increases to 3.9 million by 2050, so growth in real GDP per capita slows down.

**Table 10 – Growth and Productivity (% Change; Annual Average)**

| Growth and productivity (% change; annual average) | 2020–30 | 2031–50 | 2020–50 |
|---|---|---|---|
| Growth of real GDP per capita | 1 | 1.8 | 1.5 |
| Growth of real GDP | 2.5 | 2.6 | 2.5 |
| Labor productivity growth | 1.1 | 2 | 1.7 |

### 5.2.6 Social and Technology Issues

Two scenarios are developed: a base scenario aligned with that of the Economist Intelligence Unit, and one featuring a delayed transition. The scenarios consider the following metrics:

- Population growth: Current population growth is at 2% p.a., of which 80% are immigrants – in the Delayed Transition scenario, immigration would decline by 50%;
- Renewables for energy needs: Qatar plans to generate 20% of its energy from renewables by 2024[58] – in the delayed scenario, there is late adoption from 2025, peaking at 20% at 2030;
- Adoption of low-carbon technology – for example, electric vehicles;
- Potential energy-efficiency measures; and
- More effective use of water resources, including “grey water”.

The impact of the diversion of national income and resources towards large-scale energy investment and debt servicing may reduce the availability of funding for state services (e.g., healthcare, subsidies). This may have impacts on society at large. Mitigation of this risk and “easing the transition” will be subject to the effectiveness of government policy decisions and their implementation. The provision of jobs in the newly created sustainable industry sectors, and the re-training of labor, will be a key issue.

Table 11 – Summary of Key Scenario Assumptions

| Inputs into scenario | Baseline (Planned Transition scenario) | Delayed Transition scenario |
|---|---|---|
| GDP growth (%) | 2.5% | 2.5% from 2025 to 2028<br>1.0% from 2029 to 2035 |
| Risk rating (sovereign risk) | BB[59] | BBB |
| Per capita electricity consumption | -6% by 2022[60] | -6% by 2025 |
| Per capita water consumption | -10% by 2022[61] | -10% by 2025 |
| Renewables as % of energy need | 20% by 2024 | 20% by 2030 |
| Population growth (%) | 2% | 1% |
| Labor productivity growth | 1.1% | 0.5% |
| Unemployment rate (%) | 0.10% | 0.5% |

In making these assessments, it must be recognized that Qatar's transition is dependent not only on its own progress, but also on the progress of its geographic neighbors, trading partners, and competitors, and other countries with which it might have cultural or other ties. Demand for products is important and will be driven by the pace of decarbonization globally. Also important is how Qatar's gas exports are classified by entities like the European Union. Given these dependencies, it would also be important to consider the risks to political stability both regionally and domestically.

### 5.2.7 Investment Considerations

If a pension fund or financial institution were exposed to investments or insurance underwriting in Qatar, consideration of the above types of issues would be required. There are several factors, in addition to political risk, that should be part of the analysis. For example:

- Does the investor have internal constraints on investments which include fossil-fuel production, and, if yes, will divestment be required and over what time horizon?
- Regardless of the investor's internal ESG policies, how will any investments exposed to Qatar be affected by a global push towards decarbonization?
- Regardless of the investor's internal ESG policies, how will any investments exposed to Qatar be affected by potential divestment actions by other investors? It should be noted that this effect may occur independently or on a different time horizon than changes prompted by decarbonization, and could have either positive or negative impacts on the value of such investments.
- Would investments in economic diversification in Qatar qualify under an investor's ESG policies?
- Has the financial institution adequately protected its policyholders, shareholders, or members from losses due to divestment or stranded assets? Is the firm exposed to legal or reputational risk by its involvement with Qatar?
- What is the timeframe of the investment in the context of the expected emergence of transition risk?

The answers to these questions would then feed into the investor's own assessment of transition risk from the entirety of its investment portfolio.

## 5.3 Climate-Related Risks, Crop Failures, Food Prices, Supply Chains, and Fragility

In the final case study, three brief historical examples are offered to illustrate the concepts discussed in Section 3 regarding systems thinking and fragility. While incorporating specific analysis of this type will lie beyond the scope of many practical applications in firms, practitioners developing scenarios should consider how the components of their scenarios can be affected by such large-scale effects, particularly given how dependent our society has become on complex global supply chains. Sternberg refers to this effect as "hazard globalization".[62]

### 5.3.1 Food Price Crisis

In 2010, extreme weather patterns caused a large decline in wheat production. An "omega block" high-pressure system over western Russia and Ukraine led to heat, drought, and bushfires in wheat-producing regions, with production falling by 32.7% in Russia and 19.3% in Ukraine.

Meanwhile, excessive rain in Canada and Australia dropped wheat production by 13.7% and 8.7% respectively.[63] At the same time, China increased wheat purchases following a once-in-a-century drought.

These events had a predictable effect on wheat prices, which skyrocketed to almost US$9 a bushel in February 2011 vs US$4 a bushel in June 2010.[64] Other grains were also affected, with the United States Department of Agriculture four-crop index (wheat, rice, corn, soybean) rising by 70% between June 2010 and March 2011.[65] At the time, countries in the Middle East and North Africa imported a large proportion of their wheat supply, with the top nine wheat importers per capita all being in this region.

People in many of these countries spent a large proportion of their income on food (in 2010 Libya 37.2%, Algeria 43.7%, Tunisia 35.6%, and Egypt 38.8%),[66] percentages which are far higher than those in most developed countries. The grain price increases in 2010–2011 led to large rises in the price of bread, placing great stress on significant parts of the population and countries' political systems.

This example demonstrates the complex relationship between weather, economics, and food security. That is why it is important to consider not only the local elements of a scenario as in Section 5.1, but also regional and global dependencies, such as the supply chain for food.

### 5.3.2 Floods and Global Automobile Parts Shortages

Also in 2010, abnormally late monsoon effects from the Bay of Bengal followed by tropical systems stalling over the country led to widespread flooding in Thailand. The event spanned several months and resulted in loss of life and property destruction across large parts of the country.

At that time Japanese and American automakers had production and assembly facilities in Thailand which supplied vehicles and parts to markets across the world. In addition to global manufacturers, scores of local suppliers provided parts. The floods affected automobile production and parts supplies in many countries.

The event caught many sophisticated manufacturers and insurers off guard. Some manufacturers were not fully aware of how dependent their supply chains were on diverse sources of components, which was also shown in the Tohoku Japan earthquake and the COVID-19 pandemic. Further, at the time, Thailand flood was not well covered by commercially available catastrophe models relied upon by insurers and reinsurers to assess risk. Thus, some failed to take the full potential for Thailand flooding into account when managing or pricing for risk.

The Thailand floods illustrated two important aspects of scenario analysis:

- Complex supply chains and an interdependent global economy can transform local climate events into global economic challenges.
- Just because a risk is not modelled does not mean it does not exist; those using simulation models need to understand not only what they do, but also what they do not do.

#### 5.3.3 Fragility

Taleb and Blyth[67] illustrate fragility from the conditions which existed before the 2008 Global Financial Crisis (GFC). They cite a series of government actions, particularly in the United States, which were designed to mitigate economic risk individually but, taken together, led to the financial system becoming fragile, which was a major contributor to the GFC. These included:

- Several large bailouts of major banks starting in 1983, with some financial institutions becoming "too big to fail";
- Suppressing volatility in the economy by using interest rate reductions at the slightest sign of downward trends in economic data; and
- Managing short-term risk without properly allowing for long-term consequences.

Taleb and Blyth argue: "Those who seek to prevent volatility on the grounds that any and all bumps in the road must be avoided paradoxically increase the probability that a tail risk will cause a major explosion."[68]

This example offers another important lesson in scenario construction: that the resilience or fragility of a given system should be considered when assessing how it may react to a stressor.

## 6. Next Steps

This paper is the third in a series of papers that the IAA Climate Risk Task Force has committed to develop over the coming years. The first paper was entitled "The Importance of Climate-Related Risks for Actuaries" and was an introductory paper to the series. The second was an "Introduction to Climate-Related Scenarios". To address the needs of actuaries, more are scheduled to be released over the following years, such as papers on:

- The application of climate-related risk scenarios to asset portfolios with an important subsidiary goal of encouraging consistency between assets and liability modelling;
- Climate-related risk management and addressing emerging third-party regulatory/reporting/disclosure requirements;
- The potential effects of transition and adaptation steps; and
- The link between climate-related risk scenarios and social security.

A review of existing IAA publications is also planned to identify and address any gaps related to climate-related risks. The IAA also plans to refresh the papers in this series periodically, given the rapid pace of change in the climate-related risk space.

The IAA Climate Risk Task Force welcomes and encourages input and involvement in these activities.

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# Fair Benefits Fairly Delivered

## A Review of the Auto Insurance System in Ontario

**Final Report**
April 11, 2017

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# Introduction

## OBJECTIVES AND SCOPE OF THE STUDY

In February 2016, I was appointed by Order in Council as a Special Adviser to the Minister of Finance to review and make recommendations as to improvements in the system of auto insurance in the Province of Ontario.

Auto insurance is compulsory for drivers in Ontario. The Financial Services Commission of Ontario (FSCO), is an agency of the Ministry of Finance that regulates insurers and approves most insurers' auto insurance rates.

Auto insurance impacts all consumers in Ontario as the cost and the coverage it provides impacts not only the over 9.7 million private passenger drivers and other road users, but also is a component cost of transportation for all goods and services in the province. There are approximately 60,000 injuries in motor vehicle collisions each year in Ontario. As a result, the price of auto insurance is of significant policy interest to the government.

Ontario is frequently criticized as having the most expensive auto insurance rates in the country. The government has been taking a range of actions to meet its commitment to rate reduction, including the passage of Bill 15, Fighting Fraud and Reducing Automobile Insurance Rates Act, 2014 and a number of regulation changes.

I was asked to provide advice to the Minister of Finance on the development of further initiatives to reduce claims costs and uncertainty in Ontario's auto insurance system. In developing advice, I was asked to focus on improving the efficiency and effectiveness of claims management in the system based on best practices in Ontario and other jurisdictions. In particular, I was asked to focus on:

- **Coverage options.** The option to give consumers more flexibility to buy coverage options that reflect individual needs, and the possibility of a lower cost auto insurance product focused on essential coverages as a means of providing additional insurance options for Ontario drivers.
- **Comparable systems.** Structures of comparable auto insurance systems in Canada.
- **Common traffic injuries.** The development and implementation of a successor to the current Minor Injury Guideline (MIG) based on the most recent medical evidence presented in "Enabling Recovery from Common Traffic Injures: A Focus on the Injured Person," a report developed for FSCO by a team of medical experts led by Dr. Pierre Côté.

- **Medical examinations and assessments.** Measures to improve efficiency and reduce duplication in the provision of the overall management and delivery of health care on behalf of auto insurance claimants and insurers in Ontario's auto insurance system.
- **Legal costs.** The nature and extent of legal fees currently incurred by individuals pursuing claims in Ontario's auto insurance system, the effectiveness of current rules in place to protect consumers from unreasonable fees and possible measures to improve transparency, competition and consumer protection in this area.
- **Dispute prevention.** Approaches to preventing disputes, particularly over accident benefits claims, in Ontario's auto insurance system. This could include further examination of the Honourable J. Douglas Cunningham's recommendations in the 2014 Ontario Automobile Dispute Resolution System Review Final Report (Cunningham Final Report) for further restrictions on lump-sum settlements of certain accident benefits claims and the need for individual insurance companies to establish internal review processes.
- **Engagement and education.** Strategies to engage consumers and health care practitioners regarding changes in the auto insurance system, including strategies to inform consumers regarding new coverage options, promote adoption of new evidence-based treatment protocols and minimize the development of disputes between claimants and insurers.
- **Evidence-based treatment protocols.** Adopting new protocols and minimizing the development of disputes between claimants and insurers.

## CONDUCT OF WORK

In conducting my work, I examined extensive records and conducted research and interviews, including interviews and discussions with officials within FSCO, the Ministry of Finance and representatives of Insurance Companies and Associations within Ontario and other provinces (see Appendix I for full list). As well, I inquired into the auto insurance system of Alberta which has a similar private sector distribution system as Ontario and the systems in Saskatchewan, British Columbia and Quebec, which have various forms of public/private distribution systems.

I received significant support from the leadership and staff of FSCO without which I could not have completed my review. I would also like to acknowledge the value of the Superintendent's Report on the Three-Year Review of Automobile Insurance, completed in December 2014. In many instances, the Report was prescient in that it suggested lines of inquiry and possible improvements that anticipated my own findings and recommendations.

# Executive Summary

Auto insurance in Ontario is mandatory. It comes in two parts. A no-fault part, (also called the accident benefits part) where benefits are provided whether or not a driver is at fault; and recourse to sue an at-fault driver for damages through a court action (also called the tort or bodily injury part). The insurance premium reflects the total cost of both parts.

Ontario delivers its program through private sector insurance companies. Alberta and Nova Scotia do the same. Other provinces (like Manitoba, Saskatchewan and British Columbia) run their insurance either exclusively or mostly through government agencies, while Quebec provides all the medical and rehab benefits through the province and allows private sector companies to sell insurance for damage to the car or other property.

Since it is mandatory for drivers to purchase automobile insurance, there is a corresponding responsibility on government to create a marketplace where fair benefits are fairly delivered, at a reasonable cost. This report examines Ontario's auto insurance marketplace and provides recommendations for improvement.

Overall, Ontario has one of the lowest levels of auto accidents and fatalities in Canada and the most expensive auto insurance premiums. Historically, periods of cost reduction have inevitably been followed by cost increases. What is more disappointing is that while the number of automobile accidents in Ontario – especially very serious ones – have consistently come down, the cost of claims has consistently gone up. Ontario also has one of the least effective insurance systems in Canada. It is filled with disputes and inefficiencies, and a very high percentage of premiums are being used to pay experts and lawyers and not going directly to injured persons.

The opportunity gap: Ontario's average auto insurance premium for 2015 at $1,458 per vehicle, represents a significant expenditure for the average Ontarian. That premium is 24 per cent higher than Alberta's, double the premium in Quebec and almost 55 per cent higher than the Canadian average, excluding Ontario. Ontario drivers pay about $10 billion in insurance premiums a year. If Ontario could achieve a premium level approaching the Canadian average of about $930 it would save Ontario drivers almost 40 per cent off its current level - about $4 billion a year or some $20 billion over a five-year period – that's the opportunity gap.

The value gap: No one in the system is actively managing medical care for accident accident victims. There are clear indications that accident victims are not receiving appropriate care, they are taking longer to recover and many report that they have developed permanent impairments from simple soft tissue injuries – that's the value gap.

The structure is flawed: Current trends do not indicate that the system will self-correct. Claim costs continue to rise while automobile accidents continue to fall. The main cause is not inefficiency or excess profits by insurance companies or the behaviour of claimants, providers or lawyers. It is the way the system is structured.

The goal of the government is to provide a guaranteed safety net for those injured in auto accidents. Guranteed safety nets work best when they are administered by a government agency, which is an administrative tribunal, with authority to interpret the governing legislation and set policy and practices. Private sector insurance companies work best when they can write policies with defined conditions and benefits. Ontario has devised a guaranteed safety net for victims of auto accidents and outsourced it to insurance companies without giving them the authority to decide how to deliver it.

The legislation is at once very broad and open to a wide latitude of interpretation and at the same time regulations are very prescriptive as to how insurance companies can deliver the product. This creates an opening for disputes as to interpretation on the one hand and restrictions on efficiency on the other. It is a structural flaw in the system.

The results are not good: There is little agreement as to what constitutes fair diagnosis and care for injuries. Consequently, many applications for benefits are rejected based on medical opinions obtained by insurance companies while claimants hire lawyers and generate countervailing medical opinions. Simple minor injury sprains and strains (80 per cent of claims) often take over a year to settle and incur high medical costs. Instead of a system that helps accident victims recover from their injuries, a significant portion of the system has been diverted into a cash settlement system in lieu of care. Each year about one third of benefit costs, some $1.4 billion – about $7 billion over five years – is being paid for competing expert opinions, lawyers' fees and insurer costs to defend claims – instead of going to treatment of injured parties.

The solution does not lie in reducing benefits. Fair benefits must be taken as the starting point in any recovery, and they must be delivered fairly. If these two conditions do not exist, the system will always fail to meet expectations. Nor does the solution, purely from a cost point of view, lie in changing from a private sector delivery to a public sector delivery system. Run properly, the premium cost for drivers under either system can be roughly the same.

While Ontario's benefits, taking into account both the no-fault and tort portions are, on the whole, fair, they are not being fairly delivered. The main cause is that the system does not promote a timely, conflict-free means of deciding what care is needed and providing it to accident victims. The system allows participants to work at cross purposes to its original goals:

- Insurers do not aim to provide care to their customers rather they focus on controlling costs.
- Accident victims may seek to maximize their entitlement rather than address their need.
- Lawyers working on contingency fees work to boost the value of claims.
- Providers are paid on volume of treatments, not results.

The system has strayed far from its goals. Justice Cunningham in his review of the Ontario dispute resolution system put it this way: "the whole notion of getting benefits to deserving claimants quickly and inexpensively has been lost."[1]

Broadly speaking, this report outlines a five-part action plan.

First, the government should fix the structural flaw in the system by setting up an arms-length regulator with a skills-based board. Thankfully this is already underway through the creation of the new Financial Services Regulatory Authority in Ontario. The legislation should set broad policy goals for auto insurance in the province and give the regulator powers to enact policies and procedures. The regulator must substantially overhaul existing Regulations to make them simpler to understand and easier to apply. The regulator will need to be very much more involved and proactive in the functioning of the auto insurance marketplace than it is today.

Second, the system of compensation for catastrophically injured persons needs to be substantially changed. Cash settlements are being drained by having to pay legal fees and, in any case, cash settlements often do not adequately meet the needs of catastrophically injured persons. They need lifetime care as their needs and available treatments will change over time. This must be actively explored with the Ministry of Health and Long-Term Care.

Third, the system needs to adopt a care not cash approach. The solution lies in focusing on timely, appropriate medical care, not cash settlements. All the other expenses such as wage replacement, attendant care, pain, and suffering build from the basis of the extent of recovery from an accident. The regulator must create programs of care – evidence-based treatment protocols, used extensively in several Canadian judrisdictions– that cover most common injuries. The programs of care need to be kept up to date and new ones introduced where necessary. Investment needs to be made on research into the diagnosis and treatment of mental stress and other neurological injuries.

This serves to avoid disputes as to what care is appropriate and delivers care to the majority of injured parties immediately. Where the programs of care don't apply, or don't work, a roster of hospital-based independent examination centres should be established by the regulator to provide diagnoses and future treatment plans. Insurers must provide the treatments prescribed in the programs of care or those that are stipulated by the independent examination centre without dispute. The advice given by the independent examination centres should be taken as mandatory in accident benefits and tort disputes and courts should afford these opinions a zone of deference in tort cases.

Where the legislation provides for care, care should be provided and not cash. This shifts the focus to the needs of the patient rather than the amount of the settlement.

Fourth, contingency fees for lawyers should be made much more transparent. The need for accident victims to hire lawyers to access benefits needs to be greatly reduced by simplifying the benefits and making them more readily available. And lawyers need to be held accountable for much more transparency in how they advertise and how they charge their fees.

Fifth, the auto insurance industry is likely to undergo major changes over the next ten years as innovation and competition from non-traditional sources come into the picture. The current regime of heavy regulation and price controls is poorly suited to adapt to the future. More open systems should be explored including changes to allow insurers to introduce new consumer products and to compete more freely on price and service in the marketplace.

There are several other supporting and useful recommendations that, for example, address more efficiency in the dispute resolution system; suggestions to improve the fairness of the tort system; ways to provide better education to consumers and improve innovation in the marketplace.

Ontario must strive to close the opportunity gap and achieve a premium rate for insurance that is close to if not at the Canadian average of about $900 a year. Ontario must also close the value gap in its service and obligations to accident victims. There is absolutely no reason this cannot be achieved.

No one government bears the responsibility for the current state of automobile insurance in Ontario. Successive governments from all political parties over the past 30 years have tried to improve the cost and value that auto insurance delivers to the citizens of Ontario. No-fault benefits have been increased and decreased, access to tort has been increased and decreased, private vs. public delivery has been analyzed, cost control measures have been tried, anti-fraud measures have been introduced and freezing of insurance premiums has been tried. None of these measures has succeeded in improving service or reducing costs for a sustained period.

There is no magic bullet. To achieve lasting value for its citizens, the government must push beyond the old methods of tinkering with aspects of the system and make some of the structural changes to the delivery system as recommended in this report.

There is no need to make any reductions in benefits; indeed, catastrophically injured accident victims can be better served. There should be new investments in health care particularly for brain and mental injuries, such as chronic pain. Access to early, appropriate, health care should be made readily available. Accident victims will recover faster and fewer will develop permanent impairments from their injuries.

Disputes will be significantly reduced. Billions of dollars currently being spent on disputes can be diverted and made available to provide benefits for accident victims and those who pay premiums. The focus of the system will change from managing costs to helping injured paries recover and return to their former functioning lives. Insurers can compete on service and price. There will be robust and independent regulatory oversight.

None of the measures proposed in this report is revolutionary. There is no need to make a disruptive change from a private to a public system of delivery. The government has already put in place legislation to create an independent regulator and evidence-based programs of care are already being used to benefit thousands of injured persons in other jurisdictions across Canada. In Ontario, hospital-based teams are already engaged in providing independent opinions of future care where needed, and catastrophically injured persons are already receiving lifetime care rather than cash settlements in some auto insurance jurisdictions in Canada and in all of the provincial worker compensation systems.

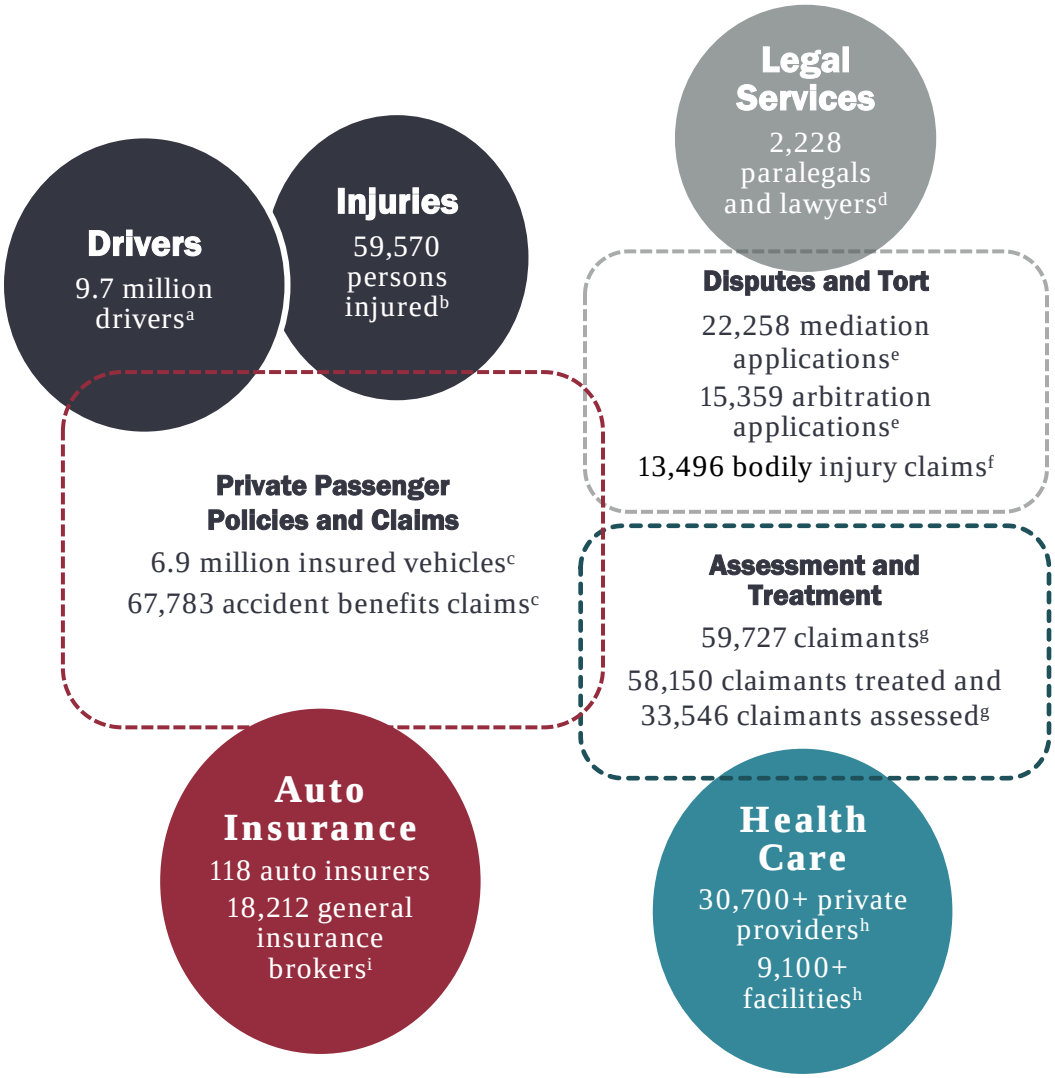
The biggest challenges will be in implementation. The independent regulator will be a new function and will have to evolve into its mature role in regulating the auto insurance industry in ways that help it deliver good value. Insurance companies will have to change from managing cash to managing care. There are plenty of examples of how this is being done today from which they can learn. Structural change does take time to deliver results. In the case of automobile insurance, the results are likely to be felt in eighteen months to two years from when action is taken. This is likely sooner than one would expect from such a transformational change in such a large system, but not as soon as some might like, namely an immediate reduction in costs.

The rewards are great for all parties concerned; and best of all they are sustainable. Ontario has an opportunity to lead the way in auto insurance.

# Auto Insurance in Ontario

## BACKGROUND/CONTEXT

**Figure 1: Major Participants and Interactions in the Ontario Auto Insurance System – 2013[2]**




The law obliges citizens who own automobiles to carry a certain level of insurance to protect against injury to themselves and others who may be injured as a result of an auto accident. It also requires a certain amount of insurance to be carried

to help with the cost of repairs to the automobile if the driver is not at fault.
The benefits that are available to consumers to help them recover from an accident are sometimes referred to as the accident benefits, ABs or no-fault benefits.

**Table 1: Auto Insurance Coverage in Ontario**

| Mandatory Coverage | Optional Coverage |
|---|---|
| Accident Benefits<br><br>Provides benefits if an insured individual is injured in an accident, regardless of who caused the accident ("no-fault" benefits) | Optional Accident Benefits<br><br>Can include greater limits for standard accident benefits coverages or new coverages such as indexation of benefits |
| Third-Party Liability<br><br>Pays for claims as a result of lawsuits, minimum coverage by law is $200,000 | Collision<br><br>Pays for losses when an insured vehicle is involved in a collision with another object, including another vehicle |
| Direct Compensation<br><br>Covers damage to an insured vehicle to the extent that the insured driver was not at fault for the accident | Comprehensive<br><br>Pays for losses from a number of different perils, including theft, vandalism, fire or hail |
| Uninsured Automobile Coverage<br><br>Protects drivers from damage caused by an uninsured motorist | Other Optional Coverages<br><br>Such as coverage for the cost of a rental vehicle while an insured vehicle is being repaired |

***Source: Ministry of Finance***

If the driver of an automobile is not at fault, the law permits him or her to recover additional damages, after meeting certain thresholds, from the at-fault driver through the courts under tort law. This is referred to as the bodily injury (or BI) or tort portion of the system. Ontario drivers are obliged to carry insurance to deal with this "third-party liability." Optional coverage is available to drivers over and above the mandatory coverages.

**Table 2: Tort Claims**

| 1. Verbal Threshold | 2. Tort Deductible |
|---|---|
| ▪ The verbal threshold is permanent serious disfigurement or permanent serious impairment of an important physical, mental or psychological function<br>▪ Only accident victims that meet the verbal threshold can receive tort compensation for pain and suffering and excess health care expenses | ▪ Court awards for pain and suffering of less than $124,616.21 are also subject to a deductible of $37,385.17 (amounts linked to annual inflation)<br>▪ A lower deductible and lower threshold apply for claims under the *Family Law Act* |

***Source: Ministry of Finance***

Automobile insurance in Ontario is not taxpayer funded. Owners of vehicles predominantly carry the cost of accidents and injuries through insurance premiums. In that sense, it is not a social welfare system. Nor is it a full tort system. Rather it occupies an intermediate zone between the two systems. The no-fault (accident benefits) part of the insurance system acts like a safety net collectively funded by the owners of motor vehicles, and the bodily injury part acts like a tort system where injured parties who are not at fault can sue the at-fault parties for additional compensation.

Because carrying automobile insurance is mandatory, the government has an obligation to create a marketplace where insurance is available and affordable. The government is also obliged to see that the system is fair and reasonably efficient in providing the intended benefits.

Governments across the country have had to decide how to balance the no-fault collective liability portion of the system with the right to sue at-fault drivers in the tort system.

The tort system is confrontational, time-consuming, involves the cost of legal counsel and experts, and ties up negotiating time if settled out of court or court time if cases go to trial. Moreover, using the court system to get injured parties what they deserve results in a significant leakage in the benefit they actually receive since the award they get is reduced by the need to pay expert witnesses and large fees to lawyers.

The no-fault portion of the system is intended by many governments to provide most, if not all, essential needs of injured parties through a system that is more efficient, less costly and delivers more of the end benefit to the consumer than the tort system. Where the no-fault portion of the system is outsourced to the private sector as in Ontario, the goals are challenging to meet. If not structured properly, this part of the system can start to mirror the tort system with its inevitable confrontation, costs and delays, which is what is happening in Ontario today.

It is important to remember that in the end, the citizen who owns a vehicle pays, through their insurance premiums, for the full cost of the combined no-fault and tort systems, whichever way the system is structured. There is no free lunch. It is also important to remember that not all injured persons have access to sue – only those who are not at fault. About 30 per cent of drivers who are involved in accidents are at fault which leaves this substantial proportion of injured persons out of the tort system and with access only to the basic no-fault coverage.

## HISTORY OF AUTO INSURANCE REFORMS

Ever since mandatory auto insurance came into force in Ontario in 1980, successive governments have been continuously striving to balance the essential goals of the system: adequacy of benefits, cost, efficiency and fairness. It is not as though these issues have been ignored.

Before 1990, Ontario auto insurance operated with minimal accident benefits on the no-fault side and largely as a tort system. Lawyers represented the majority of accident victims.

However, costs rose rapidly, and the government tried to put a lid on costs by freezing insurance premiums. In 1986 the government appointed Justice Coulter Osborne to look into the matter. In Justice Osborne's report, Report of Inquiry into Motor Vehicle Accident Compensation in Ontario (Osborne Report), he stated that rising costs due to the costs of litigation and court awards and restricted premium increases were the main cause of an insurance marketplace "crisis."

In 1990, the government shifted the balance of compensation needs from the tort system to the no-fault accident benefits system. Henceforth, to save time and money most of the requirements for compensation were to be met through the accident benefits system with restrictions on what could be obtained through the tort system. The government also introduced other recommendations of the Osborne Report namely a process of rate approvals and a system for dispute resolution outside of the courts.

Since then, a succession of governments in Ontario has grappled with the problem of the degree of protection from the effects of automobile accidents which citizens should maintain vs. affordability and efficiency.

In 1994, the then government considerably expanded the benefits under the accident benefits system, extended the right to sue under tort for pain and suffering, but eliminated the right to sue under tort for economic damages.

In 1996, the government reintroduced the right to sue for economic damages but reduced the amount of coverage for medical and rehabilitation benefits under the accident benefits system. The government also introduced additional cost control measures, such as setting maximum fee schedules for providers of health care and the requirement to submit treatment plans for approval by insurance companies. Initially, these fee schedules were based on a negotiated agreement between providers and the insurance industry. The same government introduced further refinements to these reforms in 2003.

Later, in 2003, a new government introduced legislation to temporarily freeze auto insurance rates and set an objective to reduce rates by 10 per cent.

In 2006, the government eliminated the Designated Assessment Centres (DAC) system and moved back to addressing accident benefits disputes through insurer examination assessors.

In 2010, the government introduced further substantial changes, changing benefits under the standard accident benefits coverage and presenting a series of reforms to try to control costs, exploring the use of evidence-based treatment plans, capping the cost of medical assessments, capping the maximum benefit for a minor injury and other measures. Later the government introduced many of the recommendations of the Ontario Auto Insurance Anti-Fraud Task Force.

In June 2013, the government passed the Prosperous and Fair Ontario Act, which set out a target to reduce insurance premiums by 15 per cent over the next two years.

Finally, in 2015, the government introduced legislation impacting no-fault benefits, and in April 2016 a new dispute resolution system was introduced based on recommendations in Cunningham's Final Report.

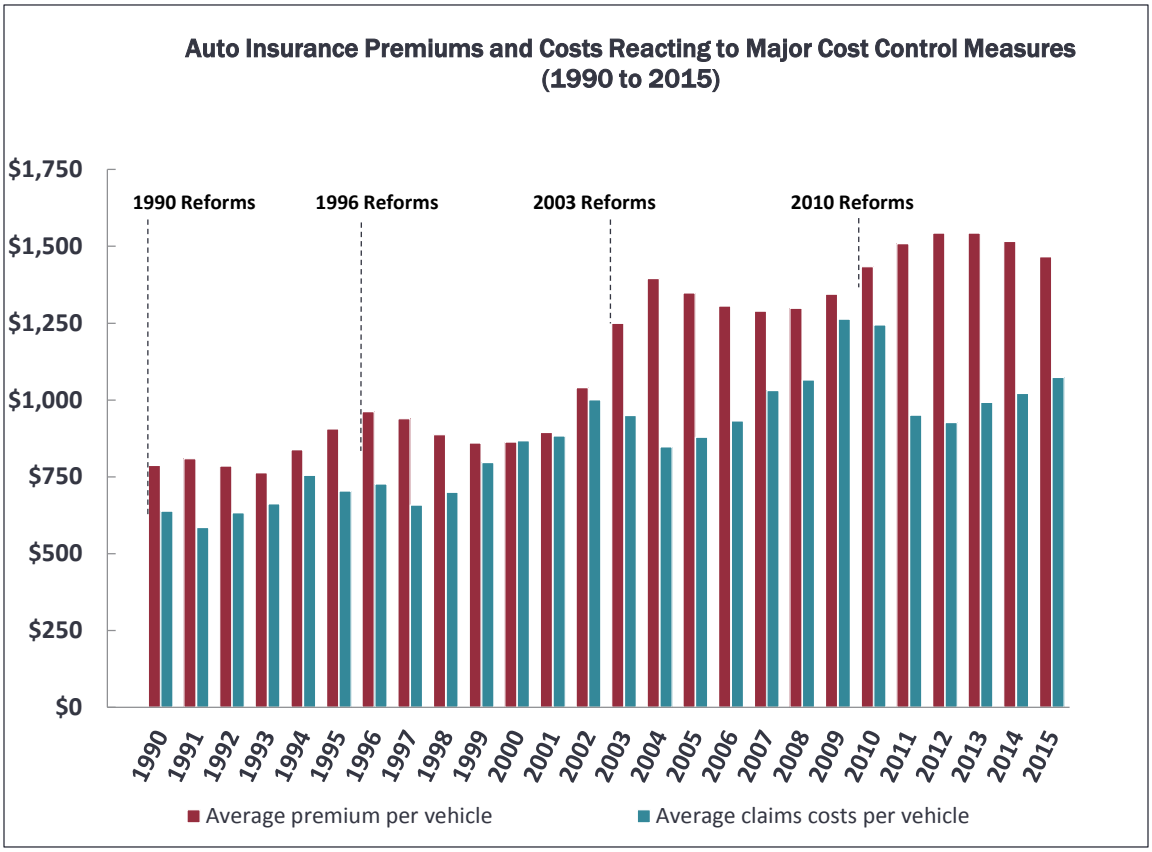
The government is presently engaged in implementing the recommendations in the report of an expert advisory panel that undertook a review of the mandates of the Financial Services Commission of Ontario, the Financial Services Tribunal and the Deposit Insurance Corporation of Ontario (FSCO Mandate Review). If adopted, these changes have the potential to substantially improve the regulatory oversight of financial services in Ontario, giving the regulator more powers to enact policies and respond to the needs of the financial services marketplace.

What this long list of interventions and initiatives by successive Ontario governments from all three political parties shows is that there has been no lack of effort to try to improve the system of auto insurance. No-fault benefits have been increased and decreased, access to tort has been increased and decreased, cost control measures have been tried, anti-fraud measures have been introduced, freezing of insurance premiums has been tried and now a complete restructuring of the regulatory body is underway.

**There has been no lack of trying to improve the system.**

Chart 1 shows that following each of the reform measures over the past years, costs and premiums come down for a few years and then begin to rise sharply to establish new highs. This has been a challenge for governments for a long time.

**Chart 1: Auto Insurance Premiums and Costs Reacting to Major Cost Control Measures**

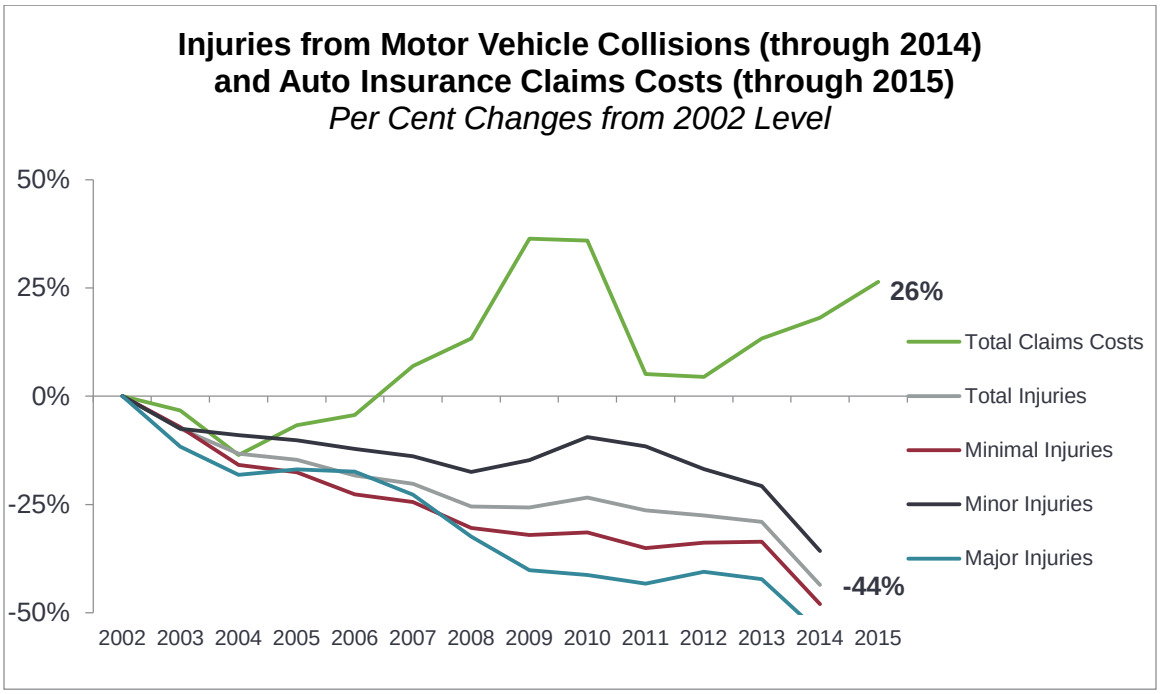


*Source: General Insurance Statistical Agency exhibits for private passenger vehicles*

Further changes in benefits were implemented in 2015 to curb costs, but trends indicate that costs will once again rise despite these changes.

What is even more disappointing is that while the number automobile accidents – especially very serious ones – have consistently come down, the cost of claims has consistently gone up (see Chart 2).

**Chart 2: Collision Injuries vs. Costs**




*Source: General Insurance Statistical Agency exhibits for private passenger vehicles and Ontario Road Safety Annual Reports (ORSAR), Ministry of Transportation*

The long, winding road we have taken over 50 years to tinker with and adjust the system of auto insurance has fallen short in one crucial respect – there has been scant innovation in the system. Aside from a few new features, such as premiums based on driving behaviour (usage-based insurance) which are not widely available or purchased, the system is still delivering the same product in the same way it has for over half a century. Part of the responsibility must lie with how the industry has been structured

and regulated. Everywhere around us industries that have failed to change are being disrupted. There is clearly a need to structure the system so that it can be encouraged to innovate and change.

# Where We Are Now – The Opportunity Gap and The Value Gap

## THE SYSTEM IS EXPENSIVE

Ontario today remains in an unenviable position. Ontario's roads continue to be among the safest in North America. In 2013, Ontario's fatality rate of 0.54 per 10,000 licensed drivers was the second lowest ever recorded. It was the second lowest in all of North America, behind only the District of Columbia. In 2013, Ontario's injury rate of 62.1 per 10,000 licensed drivers is the lowest injury rate ever recorded and among the lowest in Canada.[3]

**Expenditure not going directly to the benefit of claimants ... is threatening the very foundation of the system.**

Nonetheless, in 2015, at an average premium per vehicle of $1,458, Ontario's is the highest in Canada. Auto insurance premiums represent a significant expenditure for the average Ontarian. That premium is 24 per cent higher than Alberta's at $1,179, a province with a similar distribution structure, double the premium of Quebec at $724 and more than 55% per cent higher than the Canadian average, excluding Ontario, of about $930 (see Table 3 below). Collectively, Ontario drivers pay about $10 billion a year in automobile insurance.

To put it another way, if Ontario's auto premiums per vehicle could approach the Canadian average premium, it would represent a premium reduction of almost 40 per cent over the current level, or nearly $4 billion a year, to Ontario's consumers. That's a lot of money. **This represents the opportunity gap we must try to close.**

## IS IT DELIVERING VALUE?

Ontario also has other serious challenges. First, the amount of leakage of funds in the system – expenditure not going directly to the benefit of claimants at about $1.4 billion a year (see Table 6 below) is extraordinarily high. Second, in the course of my discussions, insurers shared with me that it is taking them over a year to close even the simplest claims on a full and final basis. Third, accident victims are having a difficult time getting what they perceive to be fair benefits. One out of three accident benefits claims goes into a dispute resolution system (see Figure 1, Disputes and Tort and Appendix VI).

And finally, despite expending large amounts on health care, a very high percentage – some 25 per cent of claims – present themselves as having developed serious and permanent impairments from what began as mostly simple soft tissue injuries.[4] **These challenges represent a value gap we must try to close.**

## THE STRUCTURAL PROBLEM

The system of regulation and delivery of auto insurance in Ontario is poorly structured.

It induces participants to act against each other rather than to ensure a common goal. Over time, governments have enacted legislation and increasingly complex and detailed regulations in attempts to solve this problem. Private sector insurance companies sell and implement this program on a cost recovery plus profit margin basis.

This hybrid structure; a government-mandated service delivered by private industry, brings with it inherent challenges that have not been well understood and have contributed to undermining the intent of the government.

Insurance companies work best when they write policies with well-defined parameters and outcomes, which allows them to estimate risk and set the premiums accordingly. We see this in typical supplementary medical coverage benefit plans or short-term and long-term disability plans. The conditions under which benefits will be available are well defined and the amount of the benefit is defined. For example, the coverages for drugs and dental care are described as being eligible for payment as long as they represent usual and habitual costs and they invariably have a maximum per person and per year or a lifetime maximum. Both parties, the insurer and the insured, understand the contract. Very few disputes arise, benefits are paid promptly and they are rarely taken to court for a decision.

## AUTO INSURANCE AS A GUARANTEED SAFETY NET FOR ACCIDENT VICTIMS

Programs like auto insurance, which have overarching goals and apply to a broad segment of society (such as worker's compensation, social assistance and others) are usually given to government agencies to administer. These agencies are given the powers and authority of an administrative tribunal. Basically, the agency is given the authority to enact policies and procedures that interpret the governing legislation and further refine their application.

Quebec, for example, has elected to provide no-fault auto insurance through an empowered government agency. This is not the case in Ontario. The government has designed a guaranteed safety net and then assigned it to private sector agents (about 100 insurance companies) to deliver without giving those agents the ability to decide how to deliver the program.

To complicate matters greatly, the current automobile insurance regulations are vague and broad in many important ways and at the same time extremely detailed and restrictive.

For example, in dealing with an injured person's entitlement to rehabilitation benefits, the Statutory Accident Benefits Schedule (SABS) enumerates a list of benefits and then concludes with:

"Rehabilitation benefits shall pay for necessary expenses ... for the purpose of reducing or eliminating the effects of any disability resulting from the impairment, or to facilitate the person's reintegration into his or her family, the rest of society and the labour market."[5]

The interpretation of this provision is wide open to dispute and disagreement. Since there is no person or agency empowered to make rules or regulations other than the Cabinet itself, the eligibility of any particular form of benefit for a given claimant is left to be contested as between claimants and their lawyers; and insurers and their lawyers either before mediators, arbitrators or before the courts.

At the same time regulations attached to the Insurance Act are extremely detailed and restrictive; insurers must follow 50 pages of prescribed forms and actions (the much-contested SABS) in virtually every interaction with their clients and providers of services. These regulations are designed to provide protections to consumers and also consistency of service across multiple insurers. These are laudable goals but there is no doubt that they also restrict innovation, efficiency and competition since every insurer must do the same things in the same way.

To access benefits a person must first fill out an eight-page form that can be difficult to understand, even though they may have already registered their claim with the insurance company by telephone. In all cases where the injury is more than "minor," a service provider must ensure the insurer approves the treatment plan to confirm that the treatment will be paid. An insurer is restricted from having a sensible discussion about the treatment. Instead, the only option is to accept the treatment plan or reject it. Plans are often rejected, but generally only after obtaining an expensive "independent" medical exam (also called an insurer examination). The injured person's only recourse, if the plan is rejected, is to seek help, usually from a lawyer, and likely to generate expensive, opposing medical exams, the cost of which get deducted from the maximum benefit available.

A large number of accident victims have some alternative health or income replacement insurance through their workplaces. The SABS stipulates that the auto insurer is the "second payer." In these cases, the auto insurance company will not pay the health care provider until after they have recovered any eligible amounts from the claimants' workplace or other insurer. Claimants are often surprised and annoyed to learn that they must first exhaust their workplace medical and sick day insurance before they can benefit from their auto insurance.

**The goals of all the principal stakeholders are not well aligned. As a result, the government's goal ... is being undermined.**

Insurance companies are not required to, and therefore many do not see their role as providing health care for their clients. They treat every claim as a cash expense and act to minimize their cash outlays. Insurance company front line staff are not "case managers," they are "adjusters." As a consequence, they are often viewed by their clients not as someone there to help them recover from their injury but as someone having a conflict of interest – since they might try to limit the amount of benefits. In my consultations with insurance companies it became clear that they are not happy with this role. They recognize that their policyholders are their clients, and they wish to provide good service. However, they feel hamstrung by the legislative and regulatory framework within which they have to work. Unfortunately, despite restrictive regulations, insurance companies could do more for their clients in the area of helping them manage health care. But the roles and positions taken up by claimants, their legal representatives and the government are such that insurance companies have found it comfortable to remain in their expected role of managing the cost of claims rather than the care. This is the outcome of decades of "expectations." All of the participants in the system have come to accept the status quo and have learned to live with it.

Most injured parties seek to receive the help they need and move on with their lives. However, a small but significant number have a propensity to maximize their entitlements rather than address their needs. They approach the insurance company with expectations that their injuries are serious and expect to encounter a reluctant payer – and in many instances their expectations are fulfilled. On the other hand, insurance companies often suspect that claimants may be exaggerating their needs in order to get a larger settlement. At present, there is no efficient, professional and unbiased way to diagnose the true needs of an injured person and to provide appropriate treatment.

Personal injury lawyers, representing clients on a contingency-fee basis, have a financial stake in the outcome and are incented to maximize the presentation of their client's disability. They enlist the services of multiple medical experts in this effort who also have to be paid for their services.

Health care providers (of which there are myriad) are incented to over-treat the client as they are being paid for treatments rather than the outcomes.

In Ontario, there are more than 30,000 providers belonging to 26 different professional bodies to treat some 60,000 injured claimants a year (see Figure 1 above).

The goals of all the principal stakeholders are not well aligned. As a result, the government's goal, to provide affordable and efficient care for those injured in automobile accidents, is being undermined by the way the structure of the system is exploited. This puts the government on the defensive when the system exhibits dysfunctional symptoms.

# The Results

## CROSS-JURISDICTIONAL COMPARISONS

Cross-jurisdictional cost comparisons are difficult to make because the level of benefits in the no-fault system and access to tort vary. Simply put, a province may provide fewer no-fault benefits but allow more access for plaintiffs to sue at-fault drivers for additional benefits. The "no-fault" insurance premium may be low but the premium to defend policyholders against claims in the event they are at fault will be higher. The resulting overall auto insurance premium thus reflects the total cost of the two benefit access systems combined. There is no free lunch.

In terms of benefits provided, Ontario has a higher level of no-fault benefits compared to Alberta and Nova Scotia, which have a similar private sector delivery structure, as well as B.C., which has a predominantly government-run, no-fault system. But Ontario has more restrictions on what can be obtained through the tort system than these other provinces. On the other hand, Quebec and Manitoba, which deliver their health care and rehabilitation program through a government agency, have much more generous benefits in their no-fault systems than Ontario. In Quebec and Manitoba, there are no limits to medical care either in dollar value or time frame, catastrophically injured persons get all the medical care they need for as long as they live and generous wage replacement till age 65. Saskatchewan's government-run, no-fault system has a maximum lifetime benefit of $6.7 million. But, in these cases, there is no access to the courts for tort recovery.

One could make a general assumption that the combined access systems provide fair benefits overall – generous no-fault benefits are accompanied with restrictions to access in tort and vice versa. There is, however, one major exception and that is that the tort system excludes at-fault drivers (about 30 per cent of injured parties.) who cannot sue under tort. Hence it is likely true to say that the more generous no-fault systems treat all accident victims more fairly than those that require access to tort. As well, when benefits are obtained through the tort system, accident victims lose a significant portion of their benefits because they have to pay lawyers and other experts to prosecute their case.

## TOTAL PREMIUMS

The combined premium costs of the two benefit access systems no-fault and tort for provinces across Canada for 2015 are shown in Table 3. We can see from this table that Ontario has the highest average premium costs across all provinces. The average premium amongst the provinces and territories excluding Ontario is approximately $930 vs. Ontario's at $1,458. Table 3 compares overall provincial auto insurance premiums. The provinces which have a private sector delivery system similar to Ontario's (Alberta and the Atlantic provinces) are shown in blue. The average premium of this group of provinces for 2015 is $914 and Ontario's premium at $1458.

With the exception of Ontario, the average premium level of provinces with private delivery systems ($914) is lower than the average premium of provinces with government-run delivery systems ($937), indicating that the method of delivery – government vs. private sector – is not necessarily a major determinant of cost.

Table 3: Auto Premiums 2015

| Calculation method | Province | Avg. Written Premium |
|---|---|---|
| Per vehicle – private passenger vehicles (PPV) (1) | Ontario | 1,458 |
| Per vehicle – PPV (1) | New Brunswick | 763 |
| Per vehicle – PPV (1) | Newfoundland and Labrador | 1,090 |
| Per vehicle – PPV (1) | Nova Scotia | 783 |
| Per vehicle – PPV (1) | Prince Edward Island | 755 |
| Per vehicle – PPV (1) | Alberta | 1,179 |
| Per vehicle – PPV (1) | Northwest Territories | 974 |
| Per vehicle – PPV (1) | Yukon | 806 |
| Per vehicle – PPV (1) | Nunavut | 968 |
| Per vehicle – PPV (5) | British Columbia (ICBC +private) | 1,316 |
| Per vehicle – PPV (4) | Quebec (public+private) | 724 |
| Per vehicle – all vehicles (2) | Saskatchewan Auto Fund only | 775 |
| Per vehicle – PPV (3) | Manitoba Public Insurance only | 1,001 |

***Source: Based on (1) General Insurance Statistical Agency, (2) Saskatchewan Government Insurance Annual Report, (3) Manitoba Public Insurance 2017 Rate Application, (4) Société de l'assurance automobile du Québec, (5) Written premium data from Insurance Corporation of British Columbia and MSA Research Inc.***

***Claims are per accident year in Ontario, Alberta, the Atlantic provinces, N.W.T., Yukon and Nunavut***

## PREMIUM MIX ACCIDENT BENEFITS VS. THIRD PARTY LIABILITY

The relative emphasis as between no-fault and tort premiums for those provinces with a private sector distribution system similar to Ontario's is shown in Table 4. What this shows is that Ontario's higher accident benefits system is reflected in significantly higher premium costs for no-fault coverage among provinces with a similar private sector distribution system. To recognize a more generous accident benefits system Ontario has the highest barriers for access to tort. However, despite this, Ontario still has by far the highest third party liability premium among provinces with a similar distribution system. Ontario is more expensive on both the no-fault and tort side of the equation which signals that there is something wrong with the way the system is being managed.

## PUBLIC VS. PRIVATE DISTRIBUTION SYSTEMS

Alberta, Ontario and the Atlantic Provinces have a private sector distribution system for auto insurance while Quebec and all the western provinces except Alberta, have predominantly government-run systems for auto insurance. Table 3 shows that both systems achieve premiums that are well below Ontario's. There are provinces with privately-run auto insurance systems that achieve a lower premium than some with government-run systems and vice versa.

Ontario's auto insurance premium is too high by a wide margin, whether it is compared to provinces with government-run or privately-run auto insurance systems. The system of distribution, whether public or private and the mix as between more or less generous no-fault systems with more or less access to tort do not seem to impact overall premium costs as much as how the systems are managed. Ontario can do well by taking the best from the other systems and improving its own.

Table 4: Average Premium Cost per Passenger Vehicle, Select Provinces

| Average Premium Cost Per Private Passenger-Vehicle ($) by Major Coverage<br>Ontario and Other Provinces with Privately-Delivered Auto Insurance<br>Accident Years 2011 to 2015 | | | | | | |
|---|---|---|---|---|---|---|
| | Ontario | Alberta | New Brunswick | Nova Scotia | Newfoundland and Labrador | Prince Edward Island |
| **Total*** | | | | | | |
| 2011 | $1,509 | $1,073 | $817 | $801 | $1,006 | $760 |
| 2012 | $1,543 | $1,078 | $804 | $786 | $1,014 | $744 |
| 2013 | $1,544 | $1,100 | $785 | $775 | $1,032 | $747 |
| 2014 | $1,516 | $1,134 | $771 | $775 | $1,054 | $756 |
| 2015 | $1,466 | $1,165 | $759 | $775 | $1,075 | $756 |
| 2011-2015 | $1,515 | $1,112 | $787 | $782 | $1,037 | $753 |
| **Third Party Liability** | | | | | | |
| 2011 | $651 | $508 | $401 | $396 | $634 | $359 |
| 2012 | $678 | $504 | $392 | $378 | $629 | $352 |
| 2013 | $693 | $517 | $386 | $369 | $631 | $348 |
| 2014 | $707 | $539 | $379 | $386 | $633 | $347 |
| 2015 | $716 | $566 | $373 | $386 | $634 | $347 |
| 2011-2015 | $690 | $528 | $386 | $383 | $632 | $351 |
| **Accident Benefits** | | | | | | |
| 2011 | $541 | $52 | $126 | $73 | $73 | $61 |
| 2012 | $558 | $52 | $117 | $66 | $73 | $60 |
| 2013 | $544 | $54 | $108 | $63 | $74 | $59 |
| 2014 | $500 | $55 | $100 | $65 | $73 | $58 |
| 2015 | $439 | $57 | $91 | $65 | $71 | $55 |
| 2011-2015 | $516 | $54 | $108 | $66 | $73 | $58 |

*Source: 2013-2015 General Insurance Statistical Agency exhibits for private passenger vehicles.*

** May include coverages not listed separately.*

*Note: There are slight, but not significant differences between the 2015 premiums in this table vs. Table 3 above due to different sources of data.*

Table 4 shows the relative emphasis placed by different provinces on the no-fault and tort systems as a means of compensating auto injuries. Overall, Ontario's system is the most expensive.

## CLAIMS APPEAR TO BE UNUSUALLY EXPENSIVE, ARE TAKING TOO LONG TO RESOLVE, AND TOO MANY ACCIDENT VICTIMS ARE SUFFERING A PERMANENT SERIOUS IMPAIRMENT FROM WHAT BEGAN AS SOFT TISSUE INJURIES

Table 5 shows that average overall claims costs (no-fault and tort combined) for those provinces with similar, private delivery systems. Ontario's average claim costs at about $11,600 is double that of most of the other provinces with similar delivery systems.

**Table 5: Avg Premiums and Avg Claims Costs 2015**

| Calculation method | Province | Avg. Written Premium | Avg. Claim Cost (incl adj. exp.) |
|---|---|---|---|
| per vehicle – private passenger vehicles (PPV) | Ontario | 1,458 | 11,556 |
| per vehicle – PPV | New Brunswick | 763 | 5,712 |
| per vehicle – PPV | Newfoundland and Labrador | 1,090 | 6,235 |
| per vehicle – PPV | Nova Scotia | 783 | 5,491 |
| per vehicle – PPV | Prince Edward Island | 755 | 4,306 |
| per vehicle – PPV | Alberta | 1,179 | 9,150 |

***Source: General Insurance Statistical Agency***

***Claims are per accident year in Ontario, Alberta and the Atlantic Provinces***

Medical care drives all the other costs in the system. The longer an injury takes to resolve, the more likely it is to become chronic, the more medical care is needed and all the other costs – replacement of lost wages, attendant care, compensation for pain and suffering also go up. Worst of all, the injured person is not well served by extending their disability.

The majority of injury claimants report that they have "minimal" or "minor" injuries at time of the accident. While symptoms may manifest themselves long after an accident, the fact is that most people are not seriously injured. Some 83 per cent of motor vehicle injuries involve whiplash or other soft tissue injuries such as a sprained back, which, most of the time, can be treated by relatively simple, short-term and inexpensive procedures that are well understood by health care providers.[6]

**The system is open to inefficiency, excessive cost and over treatment.**

In the course of my inquiries, insurers indicated to me that on average, claims that fall under the minor injury definition – mostly soft tissue sprains and strains – take just over one year to close if they are not disputed and incur an average medical cost of $2,000 to $3,000. If the claims are disputed the average time to resolve minor injuries increases to roughly 900 days and involves medical costs averaging $10,000 to $15,000. These costs, not covered by OHIP, which are for generally minor soft tissue injuries, would indicate that either there is a fairly intensive set of treatments taking place or providers are being overpaid.

Individual insurance companies do not keep track of when claimants reach medical recovery, nor does the regulator. Records are only kept on how long it takes to close a claim file. There is no record kept of outcomes or the effectiveness of medical treatments. In the absence of understanding how effectively medical care is being delivered, the system is open to inefficiency, excessive cost and over treatment. Moreover, there is no opportunity to improve outcomes for patients. Considering that support for medical recovery is one of the cornerstones of the legislation, the system is not currently meeting this standard.

The longer a claim takes to settle the longer the claimant must continue to fight with the insurance company and to assert that they continue to suffer consequences of the accident or might suffer such consequences sometime in the future.

Dr. Côté, in his study on the outcome of insurance claims for whiplash injury, points out that "there was a strong and consistent association between the time to the closure of claims and recovery from the injury. A lower level of pain and a higher level of physical functioning and the absence of depression were strongly associated with shorter time to closure under both tort and no-fault systems."[7]

The Association of Worker's Compensation Benefit Systems in Canada reports on its web site that the average duration of injury claims for 2015 (the length of time taken to get a worker back to health and to close the file) is just 76 days, about two and a half months.[8] This compares with the one year to two years or more it takes to resolve minor injury claims in the auto insurance system.

The Ontario auto insurance system could achieve better health care outcomes for accident victims and save considerable money by creating programs of care and aligning the payment schedule to those of other payers.

The study Initial Patterns of Clinical Care and Recovery from Whiplash Injuries: A Population-Based Cohort Study put it this way:

"We found that increasing the intensity of care beyond two visits to (family doctors), beyond six visits to chiropractors, or adding chiropractic to medical care was associated with slower recovery from whiplash injuries even after controlling for initial injury severity. Clinicians who promote frequent visits may inadvertently encourage patients to cope passively with their pain...patients who cope passively with their pain may demand more clinical care. Relying on repetitive clinical care likely reinforces some patients' belief that whiplash is a serious disorder with a long, disabling course. As with low-back pain aggressively treating patients with acute whiplash injuries likely promotes illness behaviours and disability rather than return to normal activities."[9]

Other studies have pointed to long recovery times and over-treatment of injured persons. The Automobile Insurance Third Party Liability Bodily Injury Closed Claim Study in Ontario conducted by Pinnacle Actuarial Resources, Inc (Pinnacle Study) found that soft tissue injuries (neck and back sprains) were associated with claimants who accounted for 67 per cent of the total claim payments in the study.[10] The study also reported that roughly 70 per cent of the claimants were classified as having no injuries or having minimial or minor injuries in the police report. Nonetheless, the majority of these claimants developed serious and permanent impairmants and the median time lost from work for these claimants was seven months.

Each year an average of about 25 per cent of injured persons make bodily injury tort claims.[11] In order to make a bodily injury claim, the individuals must produce medical evidence that they have suffered a permanent serious impairment of an important physical, mental or psychological function (necessary to pass the verbal threshold). This is a very high level of impairment from what are mostly soft tissue injuries. The provincial worker's compensation systems in Canada find that the proportion of claims awarded permanent impairment benefits across Canada is about 13.5 per cent or almost half that found in the auto insurance system in Ontario.[12]

Soft tissue injuries should not normally develop into permanent impairments if they are treated properly to begin with. The rate of impairment in the auto insurance system is a warning sign that medical care is not being properly handled. Appropriate medical treatment has been shown to reduce or prevent the development of permanent impairments from soft tissue injuries by as much as 80 per cent.[13]

## THERE ARE TOO MANY CLAIMS GOING INTO DISPUTE – EVEN MEDIATION ATTEMPTS FAIL AT LEAST 40 PER CENT OF THE TIME

Each year approximately 23,000 or about 30 per cent of all accident benefits claims – go into the dispute resolution system (see Figure 1 above). This level of breakage is a signal that there is something seriously wrong with how claims are being handled. In Ontario's auto insurance system, claims that go into dispute are represented by legal counsel nearly all the time. Over the five-year period 2011-2015, an average of 9,000 claims (40 per cent) that went into dispute resolution failed to reach full and final agreement at the mediation stage and went on to an arbitration process, adding further time and cost to the system (see Appendix VI).

## ACCIDENT VICTIMS ARE SUFFERING LARGE LOSSES

In order to understand where the costs and benefits in the auto insurance system are going, I undertook an examination for the 2013 fiscal year. What I found is that there is tremendous leakage of costs in the system. Out of the $3.87 billion in costs for 2013 (combined accident benefits and bodily injury), only $2.5 billion is going to claimants. The rest, approximately $1.4 billion, is going to other parties. Over five years this amounts to almost $7 billion going to other parties – a staggering sum which is threatening the very foundation of the system.

Table 6: Cost Leakage Analysis ($ Billions) 2013 Accident Year

| | Accident Benefits | Bodily Injury |
|---|---|---|
| 1. Total claim costs excluding overheads | 2.170 | 1.700 |
| 2. Direct cost to Insurers (legal fees + expenses) to defend claims in dispute or tort | 0.272 | 0.213 |
| **3. Amount attributable to claim payments for claimants (1-2)** | **1.899** | **1.487** |
| 4. Cost of insurer initiated medical exams | 0.278 | 0.000 |
| **5. Total claim payments (available) for claimants (3-4)** | **1.621** | **1.487** |
| 6. Cost of provider initiated medical exams | 0.065 | 0.000 |
| 7. Contingency fees | 0.096 | 0.373 |
| 8. Disbursements for medical and other experts | 0.000 | 0.057 |
| 9. Net received by claimants (5-6-7-8) | 1.460 | 1.058 |
| **10. Benefit administration loss (3-9)** | **0.439** | **0.430** |
| 11. Percentage leakage from claimants (10/5) | 27% | 29% |
| 12. Total cost leakage to the system (2+4+6+7+8) | 0.711 | 0.642 |
| Total leakage as a percentage of direct claim costs | 33% | 38% |

***Source: Analysis based on data from General Insurance Statistical Agency exhibits for private passenger vehicles, the Pinnacle Study, Ministry of Finance and insurers.***

Based on 2013 expenses, in the no-fault accident benefits system, out of about $1.9 billion in benefit payments by insurance companies, about $440 million, more than one dollar out of every four is not received by the accident victim in benefits; that is, $340 million is going to pay for competing medical opinions because insurers and claimants – or their lawyers – disagree on what is appropriate medical care, and another $100 million is going to lawyers' contingency fees. And this is in a no-fault system which is intended to eliminate disputes over fault.

In the tort or bodily injury part of the system the diversion of costs is proportionally higher. Out of about $1.5 billion in benefit settlement payments made by insurance companies, $430 million or almost one dollar out of every three is not going to accident victims; that is, $373 million dollars is going to pay lawyers contingency fees to fight with insurance companies and a further $57 million is going to pay for more medical and other experts to support accident victims claims against the insurance companies.

When you add in the costs incurred by the insurance companies to manage and defend claims in the dispute resolution and the tort systems, a further cost of almost $500 million is added to the overall costs which contribute to higher premiums but do not reach the accident victim.

Overall, out of total claim costs of about $4 billion in benefits, about $1.4 billion or some 35 per cent of the benefits costs are not going to accident victims. In my opinion, this is undermining the integrity of the system.

Commenting on his review of the dispute resolution system, Justice Cunningham said "The whole notion of getting benefits to deserving claimants quickly and inexpensively had been lost."[14]

## MEDICAL EXAMS AND ASSESSMENTS

In the no-fault system, despite the fact that the majority of injuries are relatively routine and common, a major element of delay and extra cost is caused by the inability of parties to agree on an appropriate diagnosis and treatment of the injury. As a result, many thousands of expensive medical examinations are ordered by insurers and claimants in an effort to resolve this matter. Claimants frequently have to attend more than one insurer examination. The average total cost of examinations for each of the 30,000 to 35,000 claimants is approximately $9,000 for the life of the claim.[15] The aggregate cost of these insurer medical exams is huge. In the no-fault accident benefits system, the table in Appendix III shows that they grew from $248 million in 2004 to $847 million in 2010; then in response to a cap on the cost per medical opinion and other changes, they came down to $282 million in 2012 and has grown again to $347 million in 2013. The equivalent average annual cost of medical opinions in the whole of the Ontario Workplace Safety and Insurance Board system was just $30 million in treating 170,000 injured workers.[16]

**A major element of delay and extra cost is caused by the inability of parties to agree on an appropriate diagnosis and treatment of the injury.**

These medical opinion expenses in the Ontario auto system which in 2013 amounted to over 20 per cent of money spent on actual medical treatment costs do not go to medical care for the individual. What is perhaps even worse is that the usefulness of the medical opinions is questionable. In his final report, Justice Cunningham puts it this way:

"Today's insurer examination (IE) reports appear to have little credibility with claimants and only service to trigger disputes. ... IE assessors are not accountable to FSCO, have no standard assessment protocols, report formats or timelines and are not insulated from outside influence."[17]

## SYSTEM IS FOCUSED ON CASH NOT CARE

As indicated earlier, the main reason is that the system of regulation and delivery is poorly structured. The government has enacted overarching legislation and then enacted regulations which are extremely prescriptive and handed the system to private sector insurance companies to deliver. These insurers do not have the powers of the administrative tribunal to govern their actions. Until there is a direct intervention by government to alter the system, the result will continue to experience very high level of disputes that can only be dealt with through a battle of experts and the added cost of legal fees.

**It has become a system that is largely focused on cash rather than care. ... The outcomes are not only more expensive but worse for injured parties.**

From the insurer perspective, many argue that the current structure effectively blocks them from managing the health care and recovery for their clients. As a result, claimants are left on their own to navigate the health care system with the frequent help of lawyers who themselves are not medical professionals. Overall recovery from injury is not the primary goal of anyone in the system – nor is it being measured or managed. This leads to suboptimal care, lengthy recovery times, overtreatment and escalation of simple soft tissue injuries into permanent impairments.

Faced with the structure of the legislation, insurers view claims through the lens of what they cost to settle – not what is the best medical outcome for the patient. Some claimants approach the process from the point of view of the maximum benefit they can get from the system, usually this is expressed as the dollar value of a cash settlement from the insurance company. Some health care providers in part are interested in maximizing their fees and there are lawyers, likewise, who are incented to obtain the largest cash settlement they can get for their clients since their fees are entirely contingent on the size of the settlement.

How health care goes, so goes the rest of the system. If medical recovery takes an extended time, wage replacement costs go up, attendant care costs go up, pain and suffering awards go up and all the other costs that derive from the extent of the time it takes to recover and get back to normal function go up, including legal costs.

The system has been diverted from its original goal: a medical safety net with ancillary financial compensation as a bridge. Instead it has become a system that is largely focused on cash rather than care. Paradoxically, the outcomes are not only more expensive but worse for injured parties.

# What is Needed – A Sound Regulatory Regime with Fair Benefits Fairly Delivered

Fair benefits must be taken as the starting point in restoring the system to its original intent, and they must be delivered fairly. If these two conditions do not exist, the system will always fail to meet expectations and incur unnecessary cost. Benefits in the current Ontario auto system are fair, the system does not always deliver fairness – such as in cases of catastrophic impairment where lifetime care is essential. But benefits are not being fairly delivered, too many claims for treatment are being rejected and these are going into dispute.

This is mainly because of the legal and regulatory structure which does not allow for proper assessment of accident victims' needs.

Ontario doesn't have to have a poor system of auto insurance. There are good and sound ways to improve the process. The key to improvement must begin with clear goals for the system.

Implementation of the goals must be practical, simple and efficient. The system must deliver the best for the most people in each tier of injury severity. It cannot attempt to deal with all exceptions. The no-fault system should:

- **Provide an adequate safety net for individuals injured in an auto accident**

  The majority of auto related injuries are relatively minor. The system should provide appropriate scope for medical treatment and care. The focus of the system should be on the serious or catastrophically injured, as those cases are often unique to each individual and cannot be addressed by common treatments, such as in the case of minor injuries. That is where the most need lies. To the extent possible the no-fault system should satisfy the needs of the majority of injured parties without the need to resort to an expensive tort system.

- **Benefits should be simply described and easily understood**

  There is general agreement among stakeholders that the current description and entitlement provisions are overly complex. Very few people outside those who are professionals in the system are able to understand them. This needs to change.

- **Benefits should be easy to access without the need for legal counsel**

  The insurance system should be able to quickly respond to the legitimate needs of accident victims. Not only is it clear that accident victims are worse off if medical care is difficult to obtain and extended over a long period, but it is also evident that insurers can limit costs by supporting appropriate care on a timely basis. Currently, the design of the system allows for, and actually encourages, far too many delays and disputes.

- **Premiums should be affordable**

  It goes without saying that Ontario drivers do not have unlimited resources. Since they are required to purchase insurance for automobile accidents, the government has a special responsibility to create a marketplace that is efficient and affordable. At the present time insurance premiums in Ontario need to be made more affordable.

- **The system should be able to adapt and innovate**

  No matter what changes are adopted today, they are going to be obsolete in the near future just because of the nature of the rapid change that is a constant of our time. Because the current system is so firmly tied to legislation and regulation only the Legislature or the Cabinet can make any meaningful adjustments to the system. The system is not able to adapt and improve in a rational way as circumstances change. Hence you have major upheavals every three to four years. Nor is the system able to encourage innovation in product design and delivery. In a world where rapid changes are occurring in both the financial and automotive worlds these are serious shortcomings. It needs to change.

# A Better Future – Should Ontario Move to a Government-Run Auto Insurance System?

This is a question that has come up more than once over the years. On the surface, it would seem that provinces with government-run auto insurance systems like Quebec and most of the Western provinces are able to achieve satisfactory auto insurance benefit systems at a much lower cost than Ontario has been able to achieve with its privatized model. The choice of delivery model – public or private – is not a simple one, nor is it a silver bullet. For example, provinces with government-run systems like Quebec, Manitoba and Saskatchewan have chosen to greatly enhance their no-fault insurance benefits and effectively restrict access to tort. B.C. has gone somewhat the other way with a relatively skinny no-fault benefit scheme with maximum access to tort with its attendant burden on the justice system. There are provinces with privately-run auto insurance systems that are less expensive than those of provinces with government-run auto systems. The B.C. system which is predominantly government-run, as well as subsidized, is the second most expensive in Canada, second only to Ontario's.[18]

The key to achieving lower cost and better value does not lie simply in the type of delivery model that is used. The key is to ensure that appropriate management and regulatory tools must be used which are appropriate for the model chosen. **Whichever model is chosen there needs to be certainty and speed of decision-making, simple benefit structures, efficient access to benefits without the need for intervention by third parties; incentives that are client-centric rather than provider-centric and continuous measurement and improvement processes.**

There are several good reasons why Ontario should avoid a major shift in its delivery model for auto insurance at this time.

First, a seismic change in Ontario's business model brings with it significant disruption to customer service; significant job losses in the private sector; major investments in time and money as new computer systems and administrative processes are put in place; high risk of failure and no guarantee that the outcome will be any better than the model you began with unless changes in benefits and process are also introduced at the same time. It is far superior and less risky to carefully analyze what is lacking in the current model and incrementally correct it than to take a giant leap into a new system.

Second, in privatizing the delivery of a financial product, the government is presumably hoping to capture the efficiency of the private sector arising from competition. But to reap this benefit the regulatory control governing the service must be such as to encourage rather than discourage competition and innovation.

Third, and likely most important, the insurance industry like almost every major sector of the eonomy is undergoing major disruption and change resulting from technology and customer demand. Driver-assisted and fully-automated cars will develop new opportunities to understand customer behaviour and tailor-made insurance and financial products will emerge. As well, non-traditional competitors are likely to try to enter the auto insurance field, including technology companies and the car manufacturers themselves as they chase the value chain. All the financial industry players including auto insurance providers are either in the middle of or about to commence major technology and systems investments to capture and analyze customer data. This would be the wrong time to ring fence and bring the auto insurance system in-house. It would be a solution to yesterday's problem while the ground is shifting in unpredictable ways. In times of rapid change, private companies are best poised to innovate and provide competitive services to customers, providing they are freed up to do so.

### Recommendation

**1. The government should not move to a government-run auto insurance system at this time. There is an opportunity to learn from past experience and fix the problems in the current auto insurance delivery system in Ontario as described in this report.**

# A Better Future – Fair Benefits

## BENEFITS TODAY

It is possible to achieve a much better system. The key is to cut waste, which can come in a variety of forms, such as, overtreatment, failures in coordinating proper care and administrative complexities, not benefits.

Ontario has chosen to retain its relatively rich, no-fault, first-party system with the intent that most of the needs of an injured person could be met without having to go to the courts under tort, as the vast majority of injuries are minor in nature. The richness of Ontario's no-fault benefits is often referred to as an explanation for why it's auto insurance premiums are so much higher than in other provinces. But analysis shows that a more generous no-fault system is fairer to accident victims than one which requires access to tort and does not require more cost. Quebec, Manitoba and Saskatchewan – all public or hybrid systems – all have more generous no-fault systems than Ontario's yet their costs are not only lower than Ontario's, but also lower overall than the provinces with a mix of no-fault and access to tort. So the answer to Ontario's cost problem does not point to lower accident benefits costs.

**Recommendation**

**2. Ontario's current no-fault benefits should not be reduced.**

## CATASTROPHICALLY INJURED PERSONS

While there is no need to cut Ontario's current accident benefits levels, there is a need for a different approach to the needs of the approximately one per cent of claimants who are catastrophically injured each year.

Table 7: Estimated Number of Catastrophically Impaired (CAT) Claimants in Ontario

| Accident Year | CAT claimants originally identified by 2011 survey | CAT claimants identified in 2013 survey | Total 2013 CAT claimants extrapolated for entire market | Total number of reported Accidents* | Total number of reported Injured Persons |
|---|---|---|---|---|---|
| 2002 | 376 | 433 | 546 | 244,642 | 84,192 |
| 2003 | 362 | 403 | 508 | 246,463 | 77,879 |
| 2004 | 383 | 466 | 588 | 231,548 | 73,008 |
| 2005 | 457 | 537 | 677 | 230,258 | 71,850 |
| 2006 | 461 | 589 | 743 | 216,247 | 68,793 |
| 2007 | 403 | 570 | 719 | 233,487 | 67,166 |
| 2008 | 273 | 479 | 604 | 229,196 | 62,743 |
| 2009** | - | 487 | 614 | 216,315 | 62,562 |

***Source: Ontario Road Safety Annual Report 2011***

*****2009 data incomplete for several companies***

***Table adapted from the FSCO Three Year Review***

The definition for being catastrophically injured is contained in the SABS. It is extremely complex – see Appendix II – and requires several specialists to come to a determination of whether or not an accident victim fits the catastrophic injury definition. This determination is extremely important since the benefits payable to an accident victim judged to be catastrophic are many times higher ($1 million vs. $65,000) than for an injury not judged to be catastrophic. As a result, tens of thousands of dollars – in the range of $15,000 to $20,000 are spent by the claimant and the insurer on medical reports to arrive at or challenge a determination.

As well, the process of arriving at a decision often goes through the dispute resolution system and takes more than a year to resolve (it has yet to be seen how quickly these issues will be resolved at the new License Appeal Tribunal – LAT).

There are several problems with how catastroph-ically injured claims are handled. In the first place, we have a claimant who is put through multiple tests administered by competing sets of doctors. Secondly, the claimant may wait a year or more to receive confirmation of the medical and financial help to which they are entitled during an extremely stressful and life changing time in their lives. The accident victims are, of course, using up their lower tier of accident benefits and accessing the regular OHIP and social support systems as best they can in the meantime. And in many cases, the insurer will advance funds for treatment if the person is obviously catastrophically impaired for life. However, more problematically, the accident victim may resort to financing from one of the settlement loan companies at very high interest rates. Finally, because the process to access benefits is so complex, the accident victim often hires a lawyer in order to properly access them. What can happen then, is the accident victim may ultimately find themselves with significantly less than the $1-million benefit to which they were entitled, since this amount would be partially reduced by the cost of medical exams and legal fees.

**A catastrophically injured person's needs change as they age.**

In any event, the payment of a cash settlement for needs that can run many years in the future is not well suited to catastrophically injured persons. Injured persons who receive a lump-sum payment during a period of crisis in their lives, should not be forced to figure out how to make the settlement work for their needs, not only now, but also in the future, where they could very well change significantly. As well, lump-sum settlements could very well run out during the lifetime of the injured person.

Alternatives to monetary compensation, how it is delivered and the method of support should be explored. The goal should be to increase the support given to this group of claimants. Specifically, catastrophically injured victims should receive lifetime care. Of the benefits available under the no-fault policy, the benefit for catastrophically injured persons is arguably the most important of all because there isn't the simplicity of treatment that is found in minor injuries.

If the accident benefits system does not fairly address catastrophic injuries, injured parties will go to the tort system if they can. Those who are at fault (30 per cent) will not be able to do so; those who can will pay a heavy price – in time as they fight through the dispute system – and in lawyer's contingency fees and expert fees to obtain any additional benefit.

In Australia and New Zealand lifetime care and support is provided to seriously or catastrophically injured persons. Here in Canada, the Saskatchewan no-fault system offers up to $6.7 million for seriously injured persons in their no-fault system, whereas in Quebec, lifetime care is provided in their no-fault system. Both have lower premiums than Ontario. All workers' compensation boards in Canada also provide lifetime care and support with no upper limits on costs. At the present time, the Ontario Workplace Safety and Insurance Board is looking after some 7,000 seriously injured persons for their lifetime. So, there are several examples of lifetime care being made available to catastrophically injured persons.

A further complication is that the definition of catastrophic impairment in the accident benefits system is causing many challenges both in how to qualify for the benefit and in the details as to how the benefit is to be calculated (see Appendix II). This results in long and expensive negotiations with claimants. Further, where the claimant is also seeking redress under tort, the offset of any accident benefits catastrophic payment is unclear, opening the possibility of duplicate or double recovery, which I address in depth in another section of this report.

The current definition of catastrophic injury and process for qualification of benefits is highly complex and is likely causing more problems than necessary in the system To reduce the complexity, evaluation of catastrophic impairment should be done using an objective guide such as the most current American Medical Association guide and supplemented,where appropriate, by specialized and well established guidelines. The evaluation should be done by a competent, hospital-based independent examination centre (IEC), which is discussed below.

Until lifetime care is made available, these claimants should continue to be awarded lump-sum payments. However, the lump-sum payment should be calculated based on the IEC assessment, using the degree of impairment and an adjustment for age and be made immediately and without delay by the insurance company upon receiving the report of the IEC. There should not be a need for a catastrophically injured person to retain legal counsel. The decision from the IEC should not be subject to dispute or further medical examination. Furthermore, the payment must be made fully deductible from the total settlement received under tort, another issue addressed later in this report.

## Recommendations

**3. The regulator should undertake serious discussions with the Ministry of Health and Long-Term Care to develop a service for lifetime management of care for seriously injured accident victims. Eventually, as the province develops this expertise, the expertise and even services could expand to address other injuries outside of the auto insurance system. This would allow for continuing improvements in care to develop and recommendations for preventative measures to be generated while ensuring that patients are being treated by a reliable and sustainable system.**

**4. There should be a minimum of disputes and delays in accessing single lump-sum awards for those who are catastrophically injured. Such awards, should be efficiently and quickly determined by an independent examination centre and based on objective measures, such as the American Medical Association guide, supplemented, where appropriate, by specialized and well-established guidelines.**

**5. Insurers should make sure that seriously injured persons are given top priority and do not need to hire lawyers or other professionals to get their entitlement.**

# A Better Future – Benefits Fairly Delivered

**It is necessary and essential to find a better way to resolve the issue of how to efficiently diagnose and treat injuries under the no-fault system.**

## PROGRAMS OF CARE

As stated earlier, the central failing of Ontario's auto insurance system – and the largest contributor to its cost – is the singular inability of participants to agree on what constitutes an appropriate medical diagnosis and treatment for injuries. Again, improved health outcomes must be the central goal of the system.

The SABS provides for a $3,500 financial limit within which the majority of injuries – sprains strains and minor whiplash injuries – ought to be satisfactorily treated. The $3,500 limit for treatment automatically starts the process of debate over cost rather than care. It invites claimants and lawyers to find ways to show that their injuries do not fall within the definition of a "minor injury" and hence need to breach the financial limit and access the greater benefits in the $65,000 limit applicable to more serious injuries. On the other side, insurance companies may also fight to keep claimants to the minor injury limit if at all possible.

In the course of this dynamic, claimants, lawyers and insurers spend large amounts of money – up to $2,000 on each medical evaluation – and insurers end up rejecting between 25 and 30 per cent of the amounts proposed for treatment each year. The efficacy of this process can be judged by the fact that 25 to 30 per cent of claims go into a dispute resolution system where they take longer and cost much more to settle (see Appendix VI). Cunningham's Interim Report states that 61 per cent of disputes concerned medical benefits and related assessment and examination expenses.[19]

Since there is no monitoring of medical outcomes, it is highly uncertain whether accident victims are indeed getting the right kind of care in the right facilities. Drs. Côté and Soklaridis observed in an article in Spine Journal:

"It is an unsettling fact that most interventions used in clinical practice are not supported by scientific evidence. ... It is likely that a high proportion of patients are treated every day with ineffective or unproven clinical interventions. These findings emphasize that clinicians need to be educated on the use of evidence based interventions."[20]

It is necessary and essential to find a better way to resolve the issue of how to efficiently diagnose and treat injuries under the no-fault system.

### Programs of care

The solution is to adopt programs of care, based on the principles of evidence-based medicine, for the most common (70 to 80 per cent) of injuries. Programs of care are patient- and outcome-focused for the best results in treatment. They are designed around what the patient needs, not the processes of the providers. They are also focused on health outcomes for the patient not the number of treatments provided.

Michael Porter and Thomas H. Lee, in their Harvard Business Review article, put it this way:

"In health care, the days of business as usual are over. Around the world every health care system is struggling with rising costs and uneven quality despite the hard work of well-intentioned, well-trained clinicians. Health care leaders and policy makers have tried countless incremental fixes – attacking fraud, reducing errors, enforcing practice guide-lines...but none have had much impact. Its time for a fundamentally new strategy. At its core is maximizing value for patients...We must move away from supply-driven health care systems organized around what pysicians do and toward a patient-centered system organized around what patients need. We must shift the focus from the volume of...physician visits...procedures and tests – to the patient outcomes achieved."[21]

Programs of care minimize uncertainty and disputes about what treatment is needed on a case by case basis. The vast majority of accident victims get proven care strategies and insurers do not dispute them. This provides quality care on a consistent basis, reduces delays and saves enormous cost and aggravation, while creating a fair system where accident victims are no longer forced to navigate a complex system, or find themselves caught between lawyers and insurers.

Programs of care are developed for specific types of injuries, the most common and high-volume ones. For example, there will be a program which treats muculoskeletal injuries such as whiplash, others that treat low back injuries, shoulder injuries, mild traumatic brain injuries and so forth. The programs set out clear expectations to providers and insurers: the treatment goals are defined, the duration of the care is defined and the total fee for the treatment is set.

Importantly, providers should be required to examine the patient and record their medical condition – level of pain, functionality of injured body part – prior to commencing the program and then to measure and report on the outcomes of the treatment.

Porter and Lee put it this way:

"Rapid improvement in any field requires measuring results – a familiar principle in management. Teams improve and excel by tracking progress over time and comparing their performance to that of peers inside and outside their organization. Indeed, rigorous measurement of value (outcomes and costs) is perhaps the single most important step in improving health care."[22]

Where they are used, programs of care have been developed in consultation with the relevant professional bodies and are well understood by all providers. For example, the musculoskeletal program of care used for injured workers in Ontario was developed with the participation and contribution of regulated health professional associations, namely the Ontario Chiropractic Association, the Ontario Physiotherapy Association, the Ontario Society of Occupational Therapists and the Registered Massage Therapists' Association of Ontario.

Variations of programs of care are in use in many jurisdictions including in auto insurance delivery systems in Alberta, Nova Scotia and some states in the United States, as well as in workplace injury systems throughout Canada.

The Ontario Auto Insurance Anti-Fraud Task Force Final Report expressed the view that (well-defined) evidence-based treatment protocols could make fraudulent behaviour more difficult and made the following recommendation:

"The government should reduce uncertainty and delay for those who have legitimate auto insurance claims by moving aggressively to introduce treatment protocols for minor injuries that are based on scientific evidence."[23]

In Alberta and Nova Scotia, diagnostic treatment protocols (protocols), which are similar to programs of care, provide a structured model for the treatment of strains, sprains and whiplash injuries. The focus of the protocols is patient recovery.

The patient is entitled to the number of treatments under the protocols, subject to the health professional's opinion. The treatments may not be disputed by an insurer and are considered pre-approved. Reasonable and predictable costs have been negotiated with providers, patients are treated quickly and appropriately, and treatment providers understand the parameters within which they are working and treat their patients accordingly. Disputes around the protocols themselves are infrequent because they have been established in consultation with the relevant medical practitioners and organizations.

Under the guidance of FSCO, Ontario has already made a start along this path through the development of a Common Traffic Injury Guideline, which lays out very detailed, evidence-based treatment paths for common injuries and was designed after consultations. This work would be a good starting point from which to develop appropriate programs of care for the auto insurance industry in Ontario.

The issue of quality control of health care providers was raised more than once during my study. Professional groups of providers suggested that while most practitioners were honest and competent there exist some who are not providing appropriate care.

No doubt there will be some providers who are not meeting acceptable standards. The Ontario Auto Insurance Anti-Fraud Task Force had several suggestions to address this issue. There is a practical means of promoting good providers and dis-incenting poor providers and that is to monitor the effectiveness of treatment and the outcomes achieved. This is an essential part of the process of improving both the design and the execution of programs of care. Monitoring of provider performance also helps detect and manage fraud to the extent that it exists.

While several useful and necessary programs of care have already been developed in other systems, there is always more to be done. There are more needs that must be urgently addressed. For example, chronic pain, stress related impairment and post-traumatic stress. These medical conditions have been recognized by the courts as legitimate injuries but they are often extremely difficult to diagnose and treat. They are also a significant factor in the rising cost of benefits in the auto insurance industry. Rather than passively waiting for solutions to emerge, the insurance industry should be conducting research to develop evidence based standards for the diagnosis and treatment of mental injuries.

## INDEPENDENT EXAMINATION CENTRE (IEC)

Both the Alberta and the Ontario Workplace Safety and Insurance Board (WSIB) systems have a process by which an injured person is referred to an independent expert where a program of care has not resulted in the full recovery of the injured person. In the WSIB system, where a program of care is not working or there is uncertainty around the appropriateness of different care programs, the patient is referred to a regional evaluation centre (not dissimilar to the independent examination centres, or IECs, defined in this report). The purpose of the referral is to provide and expert diagnosis of the present condition of the patient and to recommend future care needs.

In Ontario, the IEC would be a hospital-based service that brings multidisciplinary skills to the assessment and treatment plan for a patient. Being hospital based, physicians from multiple disciplines can be brought in to the assessment, as required. The IEC is also required to contact and have a conversation with the patient's family doctor who can provide a whole person context to the situation at hand. The role of the IEC is to examine the patient to establish a diagnosis and to provide recommendations on the best treatment options to facilitate recovery. The role of the IEC is forward looking and helpful to both the patient and the insurer in terms of the best options for future care. It is not concerned in any way with approving or denying a claim.

At WSIB, typical costs for a multi-discipline examination and treatment plan is much less expensive than the cost of medical examinations in the Ontario auto insurance system in two ways. It costs less than the $2,000 per opinion that is currently paid by the Ontario auto insurance system and the injured party does not have to submit to multiple separate examinations. As a point of reference the total cost of medical examinations paid by the WSIB in a year is about $26 million for a system handling 170,000 injury claims a year, compared with the approximately $350 million currently paid in the Ontario auto system for handling just 60,000 injury claims.[24]

To be adopted in the Ontario auto insurance system, the auto insurance regulator must keep a roster of reputable, competent, hospital-based IECs to which insurers can refer patients for assessment. The regulator would need to monitor the quality and timeliness of the advice given. Further, it is essential that the opinion of the IEC be taken as final and not subject to competing opinions from either the insurer or the patient. For this reason, it is also essential for the IEC to be a hospital-based team that can bring multidisciplinary skills to the evaluation and recommendation for treatment. Hospital-based teams already meet high medical and ethical standards. The WSIB, for example, has thirteen hospital-based centres on its roster, including Sunnybrook Health Sciences Centre and the University Health Network in Toronto, Health Sciences North in Sudbury and others located across the province. This model could be explored, as it provides an example of how the roster of IECs could be developed throughout the province.

The Ontario auto insurance system did try to institute something similar to the IEC concept with the introduction of Designated Assessment Centres (DAC) in 1994. These were discontinued in 2006 for several reasons. In the first place, DAC evaluations were used late in the claims process – that is as means of accepting or denying a claimant medical care as precursor to a mediation or arbitration hearing or litigation. Furthermore, DAC asessments were not unique. A claimant would have gone through asessments by the insurer before being asessessed by a DAC, and either party could dispute the DAC assessment during the dispute resolution process. DAC asessments were often long, drawn out and expensive, as several experts, frequently from different organizations, were asked for separate opinions based on their area of competency. Furthermore, arbitrators and courts failed to give a DAC opinion any degree of deference over any other medical opinion produced by either the claimant or the insurer. If this wasn't bad enough, the independence of the DAC opinion became compromised as DAC asessors also frequently acted on behalf of insurers or claimants in providing medical asessments to them separately. Ultimately, with a lack of respect for the DAC process, the cost and time involved and the independence brought into question, the DAC system failed and was discontinued.

In contrast, the IEC process is quite different in its purpose, its conduct and its process. An IEC evaluation takes place much earlier in the treatment cycle. It is not designed to accept or deny a claim. It is designed to provide guidance as to the best options for future care in cases where a program of care has not resulted in satisfactory recovery of the injured party. The IEC is hospital based and has access to a wide variety of medical and rehabilitation experts. In this role, the IEC is an extraordinary resource of first class expertise to aid in the treatment of the patient. IECs are also completely independent of either the insurer or the patient and they come with the quality control of a major hospital organization – their orientation and high level of competency is to provide the best possible medical advice.

In terms of the volume and intrusiveness of insurer medical exams, one of the issues with the current system is the frequency with which medical exams are sought by the insurers and claimants. As reported above, some 30,ooo to 35,000 claimants per year, more than half of all claimants, are subjected to medical examinations at a cost of $9,000 for the life of the claim. Because the proposed system will be based on programs of care, there will be greater certainty around treatment and the need to dispute will be greatly reduced. Only those patients who are not responding to the programs of care will be referred to an IEC. Those referrals will not be in order to deny a claim. The IEC, in consultation with the patient's family physician, conducts an examination and makes a recommendation for additional care, where appropriate, in order to help the patient make a sound recovery.

## Recommendations

**6. The regulator should move as quickly as possible to create programs of care for the most common types of automobile injuries. The programs should be based on the evidence-based findings of the Common Traffic Injury Guidelines.**

**7. The regulator should be provided with a sufficient budget to monitor and continuously improve the outcomes of existing programs of care and partner with the government on research into the development of new programs of care as the need arises – for example for neurological injuries, injuries from concussions, spinal cord injuries, chronic pain and post-traumatic stress disorder. Consideration should be given to leveraging existing programs of care that have been developed by other jurisdictions.**

**8. The government should empower the regulator with the authority and direction to establish a roster of independent examination centres (IEC) which should be hospital-based and must be able to provide a multidisciplinary team to provide appropriate diagnoses of injured patients and recommended treatment plans. Insurers must follow, without dispute, the recommendations of the IEC for future treatment within the financial limits of the insurance policy as provided by law. The dispute resolution process must respect the evaluation of the IEC without resorting to competing opinions from either party to a dispute.**

**9. The regulator should conduct regular quality control studies of the outcomes of future care recommended by IECs to monitor the quality of such recommendations and ensure their effectiveness. As part of this process the regulator should consider instituting a system of professional peer review of roster asessors to ensure quality is maintained.**

**10. The regulator should undertake a complete overhaul of the pricing schedules for treatment by providers and evaluators to bring them more in line with prices being paid by other similar bodies, such as workers' compensation boards, and to emphasize outcomes rather than the number of treatments.**

## PROVIDE CARE NOT CASH

The intention of the legislation is clearly to provide accident victims the medical care they need to recover their health with some income replacement support as a bridge during the recovery period. The legislation never intended the auto insurance system to be a cash jackpot. Many insurance companies, however, are incented not to see their role as providing medical care to their clients. Rather, they are incented to close their liability with as little cash cost as possible and hence they introduce the practice of negotiating cash settlements with claimants in lieu of medical treatment, future wage loss and other future benefits under the SABS. In Cunningham's Interim Report he put it this way:

**"Disputes and settlements need to be focused on getting claimants timely access to necessary treatment and assessments."**

**—Justice Cunningham**

"Although I sympathize with the insurance industry's desire to close files on a full and final basis, I find the practice in some circumstances counter-productive. It only encourages the type of behaviour insurers have raised with me during this review. Other insurance systems such as worker's compensation or supplementary health plans will never or only in exceptional cases pay a lump sum for future health care benefits. I would support extending the one-year prohibition on settlements if it would have an impact on the 'cash for treatment' approach to care that is widely practiced. Disputes and settlements need to be focused on getting claimants timely access to necessary treatment and assessments."[25]

Justice Cunningham is referring to the practice of insurers to want to get a full and final release of the claims against them so that they can finalize their cost and release any capital that is tied up to support future amounts that might be owing on the claim. Hence insurers often drive towards getting a release on settlement of all future claims via a lump-sum payment.

This practice is counterproductive and goes against the main goal of the system which is to provide the necessary medical care and related support – not to provide a cash lump sum in lieu of care. Trying to estimate the care and other benefits needed in the future leads to lengthy negotiations over amounts which may or may not ever be put to the uses estimated.

It also introduces professional negotiating via lawyers, which can result in a large dose of exaggeration and gamesmanship on both sides in an attempt to figure out what the other party is likely to settle for, not necessarily what the claimant actually needs. As long as there is a prospect of a lump-sum payment at the end of a process, injured parties may be advised to boost a claim in order to maximize the size off the payment. This does not serve either the injured person well (boosting a claim requires spending money on expert opinions and lengthening the time of disability) nor does it serve the system as a whole since added costs which are not necessary increases the cost of insurance for all participants.

To avoid this situation a major cultural shift needs to occur. As a start, insurers must stop pushing to reach full and final releases from their clients. A claim should be handled on its merits. If health care is needed it should be provided either through the programs of care mentioned above or through the diagnosis and treatment recommended by the independent examiner –within the dollar and time limits of the policy.

Once the claimant reaches medical recovery the claim is closed, but the claimant can return for more treatment – up to five years after their injury or other time limit in the legislation – if they can show that their condition has resurfaced and that it can be related to the original accident. This process has two big advantages: there is an incentive for the insurance company to stay in touch with their client to ensure they get the proper medical care so that they can return to normal function as quickly as possible; and there is no pressure to keep the claim open for long periods of time while negotiations for a release go on. The patient can come back for more treatment if that is what is fair and right.

With respect to the impact of removing a cash incentive, the study by Dr. David Cassidy et al. reported that when the Province of Saskatchewan changed its auto insurance system from a tort system where all compensation was given in cash vs. treatment to a no-fault system where treatment was provided instead of cash, the Saskatchewan system experienced a 28 per cent reduction in whiplash claims. Median time to closure of whiplash claims came down from 433 days to about 200 days. The study goes on to say that a decision to make a whiplash claim could involve factors beyond actual medical need and include a prospect of financial gain.[26] As pointed out by the Ontario Auto Insurance Anti-Fraud Task Force, the adoption of programs of care combined with the elimination of cash for care will have the effect of substantially reducing the opportunity for fraud in the system.

In terms of the need to tie up capital against future claims, experience within the worker's compensation system shows that the majority of claimants, once they have recovered from their injury do not need further care and do not come back for more treatment. Those that do, account for a fairly small proportion. The actuaries will quickly adapt to the rate of recurrence and are able to advise management as to how much capital to set aside for this eventuality. This is also the process followed by the Quebec auto insurance system which has demonstrated that their costs are the lowest in Canada.

**Recommendation**

**11. There should be no cash settlements in the accident benefits portion of the Ontario auto insurance system for those benefits specified in the legislation as being for medical and rehabilitation care. Where the legislation provides for cash payments, for example for lost wages and lump-sum payments for catastrophically injured persons, these would, of course, continue to be paid.**

## LEGAL REPRESENTATION, ADVERTISING AND CONTINGENCY FEES

> **"Money out of the pockets of claimants."**
>
> **—Justice Cunningham**

Insurance companies reported to me that about 25 to 35 per cent of claimants – some 15,000 to 20,000 a year – come to them at the time of making a claim or shortly thereafter with a lawyer already hired. From this point on, the insurance company must deal with their client only through their lawyer.

The incidence of legal representation quickly rises through the handling of the claim as difficulties arise. Going into the dispute resolution system at FSCO, there was virtually 100 per cent legal representation of clients and there is little reason to believe this situation has changed with the move of the dispute resolution system to the Licence Appeal Tribunal.

Legal fees are not cheap. In the no-fault system alone the cost of contingency fees annually is approximately $100 million, and in the tort system the contingency fees are about $400 million. And this doesn't count the legal costs incurred by insurers. (see Table 6 above). Clearly, a better way to deliver fair benefits to accident victims needs to be found.

Justice Cunningham's Interim Report states:

"Ontario's auto insurance system is extremely complicated.... Not only are the SABS complicated but so are the forms required to be completed by claimants to apply for benefits or for mediation and arbitration. ... In its early days, many clients accessed the DRS without a representative. This is no longer the case. ... Legal representation is not free and not necessarily inexpensive. Legal representatives are charging SABS claimants contingency fees which I am told can be as high as 30 or 35 per cent. This is money out of the pockets of claimants who need these funds to replace lost income and pay for treatment."[27]

In many ways, the need to have lawyers involved to negotiate settlements in what should be a straightforward, no-fault, accident benefits system signals a failure in the system. The system should not be as complex as it has come to be, there should not be so much uncertainty that neither accident victims nor insurers are confident as to what constitutes fair benefits.

Many of the recommendations in this report are directed at improving this situation. The simplification of the regulations referred to in a section below; the introduction of evidence-based programs of care, delivered promptly and without dispute, an independent examination centre to guide future care if needed and strong oversight by the regulator are all measures which should greatly improve speed of access to benefits, reduce the time to recovery and reduce disputes. In the section under improvements to the tort system, the recommendation that the independent examination centre opinion on the medical condition of the accident victim and the indication of future care be given deference by the court will further improve the quality and independence of evidence provided to a court.

Contingency fees permit enhanced access to legal representation, nevertheless, it is clear that there are concerns with how the contingency fee regime is operating in Ontario auto insurance cases today. The Law Society of Upper Canada's Professional Regulation Committee (LSUC Committee) looked into the issue of advertising, contingency fees, referral fees and related matters in the practice of personal injury law. The LSUC Committee recently issued its final report which did not provide specific recommendations on contingency fees. However, in its June 23, 2016, Interim Report to Convocation, the Committee addressed Advertising and Fee Arrangements and had this to say:

- In Ontario, lawyer advertising appears to have rapidly become “big business.”
- Referral fees – the practice of obtaining clients through advertising then passing them onto other lawyers for a fee – in personal injury law have become unreasonable and disproportionate and in many cases clients are not sufficiently aware that they are being referred to another lawyer.
- Due to the high cost of acquiring cases, counsel might not be able to afford to spend adequate time with the client or be prepared to take the case to trial if necessary.
- The Working Group is concerned that contingency fee pricing is not currently sufficiently transparent at the outset to consumers. In the personal injury market, the fee that a prospective client can expect to ultimately be charged often remains opaque, and it is difficult to determine whether a competitive fee structure is being proposed.

One area of particular concern is the reported practice by some lawyers of double dipping, which is, keeping part of the legal costs awarded to clients or charging their contingency fee on top of the legal costs. Keeping the disbursements and other practices not fully explained to the client up front are either in violation of the Solicitors Act or potentially questionable.

One of the more serious and unfortunate results of the delay in finalizing claims in the Ontario auto insurance system is the burden it places on claimants when they do not receive timely assistance. Consequently, clients often suffer financial hardship. To meet this need, specialized firms called settlement loan companies step into the picture. The settlement loan companies state that the loan is on a contingency basis, promising that no credit check is necessary and no principle or interest is payable unless the client wins a settlement from the insurance company. These companies provide bridge loans to auto insurance claimants ranging from an estimated $500 to $50,000 at high interest rates. There is very little transparency on who owns these settlement loan companies, how they obtain their financing and who refers clients to them.

Handling of an accident benefits claim in a no-fault system ought to be straightforward. There should be very little, if any reason to have to hire a lawyer or resort to a finance company to provide a bridge loan, especially in cases where there are minor injuries. In the future, when the core entitlement decisions are readily determined by programs of care and neutral independent examiners, there should be little structural need for conventional litigation and a consequent improvement in both health outcomes, and the efficiency and cost of the system.

## Recommendations

**12. There is clear urgency to make the accident benefits system simple and accessible without the need for legal representation. Since accident victims are in a vulnerable position and contingency-fee arrangements are not very transparent, the government should consider:**

- **Banning or restricting advertising and referral fees, and restricting contingency fees in personal injury cases, as the law society reports is being done in some jurisdictions such as in England, Wales and Australia.**
- **Requiring contingency-fee arrangements to be filed with the regulator, who should inquire into their fairness on a spot-check basis and work with the relevant authorities to curtail abuses if they arise.**
- **Settlement cheques should be made payable jointly to the accident victim and the lawyer. This will allow the accident victim to clearly understand the relationship between the total settlement and what he or she eventually receives.**
- **Claimants should be informed in writing, possibly on a final settlement schedule, of their right to appeal the fees charged by their lawyer and where to apply to do so.**

**13. The regulator should monitor the overall use of legal representation in the accident benefits system to analyze why claimants are needing to resort to legal advice. Also, the regulator should examine if the system should be further simplified, barriers should be removed or other practices changed to reduce the need for the time and expense of legal involvement.**

**14. The regulator should monitor, on a continuous basis, the length of time insurance companies are taking to provide benefits to claimants and determine if undue delays are causing financial harm to accident victims.**

# Dispute Resolution

In his final report, Justice Cunningham observed:

"One of the things I quickly realized...was how polarized the system has become. I am certain that when the first no-fault auto insurance system was introduced in 1990, policy makers did not contemplate that the claims process and the [dispute resolution system] would become so adversarial. This was very much reflected in the feedback received from stakeholders. The insurance industry points to the plaintiff bar as the source of the system's problems, while the legal community blames the practices of the insurance industry. Neither is an accurate portrayal of the current system."[28]

In the Ontario auto insurance system, in one out of every three cases, the insurer and the claimant cannot agree on what is a fair compensation for the injury involved. Until the Licence Appeal Tribunal began in April 2016, accident benefits disagreements were first sent to mediation and evidence shows that almost 40 per cent of the time the disagreements were not resolved at mediation and cases proceeded to arbitration (see Appendix VI). Justice Cunningham made proposals to streamline the process of mediation/arbitration and his proposals have for the most part been accepted and implemented this past year. And, while on the right path, there is more work to be done to improve the system.

The recommendations noted in earlier sections regarding introduction of programs of care, continuous care, absence of cash settlements and an independent examination centre should go a long way towards reducing disputes in the no-fault system. There should be a goal to achieve a dispute level of no more than 10 per cent compared to the current average of over 30 per cent. Later, even more challenging goals can be set.

Following Cunningham's Final Report, the dispute resolution system moved from FSCO to the Licence Appeal Tribunal of the Safety, Licensing Appeals and Standards Tribunals Ontario and many reforms were put in place.

## INTERNAL APPEAL PROCESS

Justice Cunningham recommended that insurance companies set up an internal appeal process. The system of dispute resolution can be greatly helped if it becomes mandatory for insurers to have an internal appeal process. It should be staffed with case managers who have the experience and judgment to review decisions made by front line staff. The appeal team should be required to issue written decisions with explanations and support for their opinion.

Experience in the Quebec auto insurance and worker's compensation systems has shown that an internal appeal function can usually resolve half or more of disputes without the need to go any further. The internal appeal function adds further value by acting as a feedback and training loop for front line staff who learn about mistakes they may have made and are able to improve their decisions going forward. It also gives management an opportunity to adjust and change procedures based on results from the appeal team.

The auto insurance regulator should monitor the functioning of the automobile insurance dispute resolution system. For example, if a particular insurance company is generating an unusual number of appeals at the Licence Appeal Tribunal or an unusual level of reversal of their adjudicative decisions on claims, the regulator should be given the right to audit and examine the internal management and training practices of those insurers with a view to improving decision making and lowering the number of disputes going to the dispute resolution system.

## GATEKEEPER FUNCTION

There is great value in establishing a gatekeeper function at the Licence Appeal Tribunal, as recommended by Justice Cunningham. More recently, a gatekeeper function has been established at the Licence Appeal Tribunal. Experience in other systems shows that this function can significantly improve the efficiency of a dispute resolution system by ensuring that claims have all the necessary documents and qualifications to proceed to examination. The gatekeeper should perform two important services.

First they must make sure that an appeal is ready to proceed, that is, all the required documents are present and all processes have been followed, which is now in place. The gatekeeper function should also insist that the claimant provide evidence of having gone through the insurer's internal appeal function before allowing the claim to proceed further.

Second, the gatekeeper must determine if new information is being introduced that has not previously been shared by either party with the other. The dispute resolution process should not become an exercise in gamesmanship or ambushing an opposing party. If there is new information that is relevant to the case it should be presented back to the original decision-maker at the insurance company or to the claimant. This might well change the decision and avoid the need to proceed any further. Only after the new information has been thoroughly considered and a new decision rendered should the appeal be allowed to proceed through the formal appeal process if necessary.

## EXPERT WITNESSES

Overwhelmingly, disputes centre around or are related to the medical condition and necessary treatment of claimants. Trying to resolve this type of dispute through the process of sifting through competing expert opinions is not the most efficient or even the best way to arrive at fair conclusions. Both insurer and claimant will seek experts whose opinion is likely to support their position.

Justice Cunningham put it this way in his final report:

"Part of the culture shift that I see being needed within the Dispute Resolution System (DRS) is that medical experts appearing before adjudicators should have a duty to the DRS and not to the party that has retained them. Experts should be required to certify their duty to the tribunal and to provide fair, objective and non-partisan evidence. Arbitrators should ignore evidence that is not fair, objective or non-partisan."[29]

In order to meet the standard of objectivity and professional competence, adjudicators should be required to rely on the opinion of the independent examination centre (IEC) referred to above. IECs will be selected by the regulator who will create a roster of such centres. In the first place this serves the injured person extremely well since he or she will be getting advice from a highly qualified and independent team. Secondly, the opinion of the IEC can be relied upon, in the great majority of cases, to reflect some of the best medical thinking and techniques available.

As described earlier, the opinion of the IEC, in consultation with the family physician, must be relied upon during the management of care in the first instance that it becomes apparent that the current approach to treatment is not working. It should also be taken as final in the case of a claim going into dispute resolution. The case manager at dispute resolution may ask for a second evaluation from the roster of IECs if it appears necessary for whatever reason, but there must be no submission of competing evaluations by either the insurer or the claimant. This process would best satisfy the essential requirement that an expert witness be competent and objective and not beholden to either party in a dispute. It would also allow disputes to be handled efficiently, with less cost and with the least damage to trust in the system.

Dispute resolution in New Jersey's auto insurance system has an analogous provision. There, the arbitrator of a dispute must use a certified medical review organization as designated by the New Jersey Department of Banking and Insurance to perform a medical review of the claimant's case. The determination of the medical review organization is presumed to be correct unless the arbitrator finds the opinion to be clearly wrong, in which case he or she must provide written explanation of the reason.

## Recommendations

**15. Insurers should be required to establish an internal appeal process to provide an early resolution to claims and reduce the number that have to proceed to the external dispute resolution system. The regulator should monitor the effectiveness of the internal appeal process and be empowered to order corrective action if a particular insurer is generating an unusual number of claims to the dispute resolution process.**

**16. The gatekeeper function at the Licence Appeal Tribunal should insist that a claim has gone through the insurer's internal appeal process before allowing it to proceed further. The gatekeeper should also determine that if new information is being introduced in the claim, it should go back to the original decision-maker to see if it changes the decision before the appeal proceeds.**

**17. In relation to medical condition and treatment, the opinion of the independent examination centre should be taken as definitive by arbitrators. If, in exceptional circumstances, the arbitrator has reason to be concerned about the independent examination centre opinion under consideration, the arbitrator can ask for a second opinion from a second independent examination centre from the regulator's roster. Competing examination opinions from experts hired by either the claimant or the insurer should not be permitted.**

## Bringing Simplicity and Responsiveness to the System

Generally, all parties who participate in the system agree that is that the current legislation and SABS is complex and very difficult to interpret. This is surely a major contributing factor to disputes and disagreements.

The Ontario Trial Lawyers Association's (OTLA) letter to me observes:

"Those who work daily within this system have a difficult time interpreting the complex legal maze that is now Ontario auto insurance. ... The ability of the average policyholder to competently manage his or her own insurance claims and related disputes is essentially non-existent. .... Both the tort and accident benefits legislation and regulations involve multiple, often incomprehensible tests for benefit and compen-sation entitlement that have led to decades of litiga-tion, at an enormous cost. As much as possible, we must eliminate those tests that lead to uncertainty and litigation."

**"The ability of the average policyholder to competently manage his or her own insurance claims and related disputes is essentially non-existent."**

**— Ontario Trial Lawyers Association (OTLA)**

Justice Cunningham put it this way:

"The SABS has become a complex and difficult document to interpret; many stakeholders noted that it is very difficult to work with it. Insurance companies need to make a considerable investment in training and developing adjusters, as does FSCO in respect to its mediators and arbitrators. Claimants need to find representatives well versed in the regulations. The learning curve associated with the SABS adds cost to the system**. Other no-fault schedules are far less complex and not so procedure-oriented** [emphasis added]. Everyone would benefit from a wholesale review of the SABS in an effort to simplify the regulation."[30]

See Appendix IV for the sections from the SABS that describe income replacement benefits, one of the main types of benefits available under the auto insurance policy. There are various procedural and definition provisions that would be relevant to a claim, but these are the main sections that set out the terms and amount of entitlement. It would take many close readings of this section to understand what the entitlement to benefits amounts to, if indeed a lay person were able to understand it at all.

There is an urgent need to address the complexity of the auto insurance regulations.

There should be well defined schedules of benefits with limited or no need for complex adjudication. The Société de l'assurance automobile du Québec (SAAQ) website offers a good example of simple, clearly understood benefits and how to access them.

The new rules should encourage the direct contact of insurers with their clients so that insurers and health care providers can work collaboratively for the health care needs of their client.

Having the regulator responsible for formulating the rules (as opposed to government amending regulations) will allow this function to respond to the need to change and evolve much more efficiently than the current structure that has to be deployed before any change can be made.

Moreover, the rules should focus on outcomes rather than process. Instead of particular forms to be used there should be a requirement to meet certain standards; for example, standards of care, standards of fair treatment, benefit of the doubt to claimants and other key components of a well-functioning system.

### Recommendations

**18. There is an urgent need to revise and simplify the legislation and current set of regulations and focus on desired outcomes and less on the details of process.**

**19. The new regulator should be given authority to make regulations (already underway). Rules should support insurers to be in direct contact with their clients so that they can manage care and recovery for their clients.**

## CONSUMER CHOICE – LEAVE IT TO THE MARKETPLACE...

The question of consumer choice is a difficult one to address since the auto insurance system at its heart is a safety net designed to provide needed coverage and not a suite of options based on the personal opinion of the policy holder. Consumer choice in this context usually means allowing drivers to pick a less costly coverage if they are willing to take the risk of a lower safety net. This may result in a compromise of people's safety or a lack of access to necessary treatment. On the other hand, the option to buy more coverage brings with it the need to ensure there is transparency across insurers and some confusion and lack of understanding of what is being purchased may result.

Having said that, there is a legitimate question as to how far the safety net should extend. Should the mandatory safety net cover just the most serious injuries? After all, coverage costs money. Should the government insist on coverage for catastrophic injuries and allow consumers to buy coverage for less serious injuries if they want to?

These questions lie at the heart of consumer choice. If current trendes like ridesharing are any indication, increasingly in the future, consumers will push to be allowed to tailor their purchases to their needs rather than be forced into a one size fits all product. How the government addresses this movement is of great importance. This is not the purview of this study, but it is true to say that it is an issue that is not going to go away and that the government needs to equip itself with sufficient structures and research to understand what society is likely to need in the near- and medium-term future. All of these issues should be taken into consideration as the new regulator is established.

Having said that, there are some particular cases where consumer choice can make sense. For example, according to the Canadian Life and Health Association close to 70 per cent of drivers have access to some form of medical or income replacement insurance, mostly through their workplaces, in addition to carrying auto insurance. At the same time auto insurance is a second payer – after other insurance coverages of the claimant have been used – which means that for those drivers who already have workplace insurance, they are caught between two competing insurance companies with potentially different claims processes and criteria for accepting claims. As well they must first use up their workplace insurance entitlements before they can access their auto insurance. This is a source not only of administrative complexity but also a source of surprise and frustration to claimants.

As well, there are several drivers who, due to their youth or other circumstances, would like to carry less insurance than the standard policy. After protecting others through a minimum liability insurance, a sensible system of consumer choice whereby a person may consciously take less auto insurance and save money should be explored.

At the other end of the scale, insurers should be empowered to offer additional coverages and new products if consumers are willing to pay and insurers should be encouraged to innovate and introduce new products.

Consumer choice is a powerful force that is going to change the nature of auto insurance in the not too distant future. An independent regulator held accountable for the functioning and responsiveness of the system, less prescriptive regulation, more outcome-based regulation and more flexibility on setting price should all be part of an overall regime to encourage and adopt innovation.

## PROVIDING ENHANCED EDUCATION TO CONSUMERS

One of the frequent observations of stakeholders familiar with the sytem, is that consumers are generally ignorant of their insurance coverage and hence become annoyed and feel taken advantage of when it comes time to access benefits. Simplifying the regulations concering entitlements will go a long way to increasing transparency and trust.

Two actions might further improve this situation:

One consideration could be to institute an “Office of the Driver Adviser” or something similar to the proposed “Office of the Consumer” to the Financial Services Regulatory Authority. Such an office would be available to explain how auto insurance works, how to access benefits efficiently and the rights and obligations of drivers. Second, it may be useful to consider making some basic insurance concepts part of the driver education program and requirement to pass a driving test.

The Ontario Auto Insurance Anti-Fraud Task Force also had a number of good suggestions to help create an informed consumer as a protection against illegal or fraudulent practices. The task force’s final report suggested, among other things:

“With respect to *prevention*, our key recommendations include:

- “The government should join with insurers to form an Anti-Fraud Awareness Implementation Group to implement a consumer engagement and education strategy. This group should oversee the creation of:

- "educational material in different media that could instruct consumers at critical moments such as when they learn to drive, select an insurer, choose optional coverage, collide with another vehicle or make an insurance claim; and
- "a dedicated, multilingual website that would explain how to make an auto insurance claim, what to expect by way of treatment and recovery after an injury, and how to avoid, detect and report improper activity."[31]

**Recommendation**

**20. Consumer education in the field of auto insurance is a key component of a well-functioning system. In conjunction with making the rules and regulations governing the system simpler, the government should seriously addressthe need for enhanced consumer education. The recommendations of the Ontario Auto Insurance Anti-Fraud Task Force and the creation of an "Office of Driver Adviser" should be considered.**

## ENSURING GOOD FAITH

At present there are no specific rules about the consequences of false statements in the context of tort liability claims for damages. This needs to change to send a clear signal that the tort system will not be used to fuel fraudulent claims.

Claims under insurance policies, including claims for accident benefits are subject to provisions that apply consequences if a person makes a false statement. The logic for this is strong. Benefits administrators largely depend on the claimant's own recitation of facts, portrayal of symptoms and assertions of impairment in order to evaluate entitlement. Assessors and adjudicators also must make decisions based on the veracity of the claimant's own description of condition and circumstance. Much hinges on that foundation of personal credibility.

If a testimony is not reliable, then the system is deprived of the best evidence necessary to determine entitlement.

The Insurance Act recognizes the public policy of negating entitlement for dishonest claimants. Section 233 of the Insurance Act states:

> **Misrepresentation or violation of conditions renders claim invalid**
>
> **233. (1) Where,**
>
> > **(a) an applicant for a contract,**
> >
> > > **(i) gives false particulars of the described automobile to be insured to the prejudice of the insurer, or**
> > >
> > > **(ii) knowingly misrepresents or fails to disclose in the application any fact required to be stated therein;**
> >
> > **(b) the insured contravenes a term of the contract or commits a fraud; or**
> >
> > **(c) <u>the insured wilfully makes a false statement in respect of a claim under the contract</u>,**
>
> **<u>a claim by the insured is invalid and the right of the insured to recover indemnity is forfeited</u>. R.S.O. 1990, c. I.8, s. 233 (1).**
>
> **Statutory accident benefits protected**
>
> **(2) Subsection (1) does not invalidate such statutory accident benefits as are set out in the Statutory Accident Benefits Schedule. R.S.O. 1990, c. I.8, s. 233 (2); 1993, c. 10, s. 1.**

Section 233 broadly applies the false statement rule, but subsection 233(2), above, paradoxically exempts accident benefits claimants from the general rule.

Within the SABS regulation a modified version of the false statement rule is applied. Section 53 of the SABS 2010 states that an insurer may terminate **the payment of benefits to or on behalf of an insured person if the insured person has wilfully misrepresented material facts with respect to the application for the benefit but not to any other aspects of evidence provided.**

**Recommendation**

**21. Repeal subsection 233 (2) and amend 233 (1) so that SABS claims and tort claims are subject to exactly the same rule that applies to other auto insurance claims.**

## IMPROVEMENTS TO THE TORT SYSTEM

Applications for compensation under tort in Ontario accounts for a significant part of the premiums of the system – equal to or greater than the first-party, no-fault system (see Table 4 above).

**The inefficiency and cost of tort claims has a large impact on the cost of the system as a whole.**

The FSCO Three Year Review states that:

"Between the 2004 to the 2013 accident years, [bodily injury] claims costs for private passenger vehicles increased from approximately $1.32 billion to $2.48 billion, an increase of approximately 88 [per cent]. This is mainly due to a significant increase in the frequency of these claims."[32] While at the same time the number injuries, especially major injuries, from motor vehicle collisions was falling rapidly (see Chart 2 above). The Pinnacle Study of bodily injury claims found that the majority (67 per cent) of claimants for serious and permanent impairment had suffered soft tissue injuries – sprains and strains – at the time of the accident.

Clearly something is happening in the bodily injury portion of the system that is not being driven by changes in the number or severity of injuries. As well, it seems that the generous benefits in the no-fault portion of the system are not having the effect of reducing the amounts awarded under tort claims, while the no-fault system has itself become fraught with legal disputes and delays.

The improvements to medical care described above should significantly improve the incidence of permanent impairments, particularly from soft tissue injuries. As well, timely and objective recommendations of care from independent examination centres should reduce disputes and improve care for accident victims. Nonetheless, a number of administrative inefficiencies and some unfairness to one party or the other has crept into the system. This has led to drawn-out negotiations and in the relatively few instances where the cases go to trial, there are long delays – up to two or three years, and considerable costs before a claimant gets to receive any benefits due to them.

The current process for tort claims follows procedures in the court system developed over many years for all kinds of claims, some of which are highly complex. Auto insurance tort claims, while numerous (about 15,000 to 17,000 a year) are relatively straightforward. The issues in dispute recur frequently and seldom involve complex issues of law.

Under the current system, the basic issue of parties exchanging relevant documents and information is highly inefficient. There is no prescribed set of documents that must be produced by each party. If one party refuses to offer certain documents, the other must make a motion to the court, often a lengthy process, to compel the party to produce the documents. There is no provision for an early examination of the plaintiff or expert witnesses, which might help resolve the case before it has to go to court. As a point of comparison, the dispute resolution system at the Licence Appeal Tribunal provides for an early "case conference" to resolve issues before the case proceeds.

In the tort system, examination for discovery under oath comes much later in the litigation process and does not permit the examination under oath of expert witnesses for either side. And there is no process to encourage parties to move the case along and avoid delay.

In terms of compensation under tort, measurement of the amount and nature of future care is an area that is particularly complex and hotly contested. The opinion of an objective independent examination centre should go a long way to helping the parties to a claim come to a fair resolution of this matter. As well, amounts awarded under the no-fault system are difficult to relate to the awards made under the tort system leading to the potential for double dipping by the claimant.

As it stands today, policyholders are paying for a tort system with very little transparency as to its costs and relative benefits. And accident victims – who pay a high price for legal representation – are walking away with a lot less compensation than they ought to get. Furthermore, the tort system excludes access to drivers who are at fault, (approximately 30 per cent of accident victims). The challenge is to find the right balance between the freedom and right to sue for damages and the time and cost involved. After all it is fundamentally this reason why the no fault accident benefit system was created in the first place.

## Recommendations

**22. The government should consider implementing ways to make the system for automobile accident tort claims more streamlined, particularly:**

- **Creating a prescribed list of documents that must be produced.**
- **Allowing for earlier examination under oath for both claimants and expert witnesses.**
- **Providing for some form of case management that encourages cases to proceed with a minimum of delay.**

**23. The regulator should monitor the awards and costs of the tort system to determine if changes need to be made to the no-fault system to avoid having to sue under tort and to recommend changes to the tort system if costs appear to outweigh benefits from a public policy point of view.**

**24. The independent examination centre's opinion as to the claimant's medical diagnosis and future care needs, should be given a zone of deference by the courts in tort cases. This means that the opinion of the independent examination centre should be taken as definitive unless there is compelling reason to doubt it.**

**25. There should be full deductibility of accident benefits awards from tort awards.**

**26. Contingency fees in tort cases should be made fully transparent to the client, including notification that fees can be appealed.**

**27. Claimants should be informed in writing, possibly on a final settlement schedule, of their right to appeal the fees charged by their lawyer.**

**28. Settlement cheques should be made payable jointly to the claimant and his or her lawyer to allow the claimant to fully understand and accept the disposition of the funds.**

## INNOVATION AND PRICE REGULATION

It is safe to say that in just a few years – perhaps as few as ten years - automobile insurance in Ontario will not be the same as it is today. In every part of the economy change and innovation is taking place. Traditional providers are being displaced and whole sectors of the economy are being disrupted by technology. The financial industry is no exception. Automobile insurance in Ontario, a multibillion dollar industry, is ripe for disruption.

**Automobile insurance in Ontario will not be the same as it is today.**

In order to adapt to consumer demands, it is more than likely that auto insurers will need to merge or cooperate with players in other industries such as car manufactures, technology companies or providers of home security systems who are attempting to gain primary control over the relationship with home owners through knowledge-based monitoring of their behaviour.

It is critical that the legal and regulatory framework for the industry be so organized as to allow rapid evolution to take place in at least a rational and secure way, while continuing to protect consumers. The current framework is singularly unsuited for this role because it is not structured to be flexible and able to adapt to change.

Let us imagine one plausible disruptive scenario. A major automobile manufacturer decides to sell their cars with insurance bundled in at $400 for three years or 30,000 kilometres, whichever comes sooner. The coverage is simple, $x for medical care geared to the loss of a limb or bodily function or damage to the brain or nervous system; repair of the automobile. Part of this scenario, lifetime insurance coverage for damage and repair to the car, has already been announced by Tesla for the Asian market and by Volkswagen in Europe. It is not a stretch to find that the coverage could be extended to health care and income loss for accident victims as car manufacturers seek to find new sources of income. How will the government react? Will it try to protect the existing industry by making such an offer illegal? How will they deal with consumers who demand they be allowed to purchase such a product? How will the SABS apply? This is not a dissimilar scenario than what is being faced by the hospitality industry and the taxi industry today. To react to consumer demand, governments will have to rethink the meaning of the health care safety net incorporated into the current auto insurance product and flexibility around how it
might be delivered, as large parts of the existing regulations would likely become obsolete. The long and cumbersome premium rate setting regime will be outdated or even useless. There will be far fewer disputes and costs.

While all of these are important questions that address how the system might evolve, the point is that the system needs to be geared to adapting to rapid change demanded by consumers. For example, to what extent do consumers really want or need the level of coverage the government has deemed necessary? Are there better ways of delivering value? At the present time, several of the key players are simply carrying on as if change will come gradually. That's a recipe for unwelcome disruption.

**"A ... trend away from regulation of the pricing of automobile insurance."**

**— FSCO Mandate Review**

The system of pricing approvals today is becoming quickly outdated, time consuming and expensive. It needs to be addressed. Basically, it is a cost plus margin-for-profit system. Insurance companies present their costs and are given a margin, until recently five per cent, above their costs to set their premium. Critics have pointed to this system as being unfair to consumers since it protects insurance company profits and subsidizes inefficient providers. There are some 100 insurance companies providing auto insurance in Ontario with about 20 companies accounting for the majority of market share. Because of the built-in inertia and complexity of the rate approval process, insurers' ability to respond to market changes and take advantage of opportunities for innovation and competitiveness is reduced.

Commenting on the current rate regulation regime in Ontario, the FSCO Mandate Review expert advisory panel made the following observation:

"[There is] an international trend away from regulation of the pricing of automobile insurance while consumers seek more personalized coverage options. Many jurisdictions, particularly throughout the United States and Europe, have moved away from the prior approval system that is used to regulate auto insurance rates in Ontario. We heard from one U.S. jurisdiction that it experienced auto insurance rate reductions for nearly 80 per cent of drivers following the introduction of a more flexible system."[33]

## Recommendations

**29. To the extent possible, the regulatory regime should be overhauled to encourage insurers to innovate and introduce new products even on a trial or experimental basis.**

**30. The government should undertake a comprehensive review of auto insurance pricing alternatives with a view to providing more competition in the marketplace.**

## Role of the Regulator

If Ontario's system of government legislation with private sector delivery has any chance of operating well, a new role for the insurance regulator must be constructed. As discussed earlier, individual insurance companies, much less 100 of them, are in no position to, nor should they devise rules governing the delivery of insurance and the general operation of the insurance marketplace. Further, the government of the day should not be tasked with directly addressing these issues because there are more pressing big-picture issues to be addressed. In the absence of a strong central guiding force to conduct these functions, disagreement, confrontation and dysfunction are bound to prevail.

**A new role for the insurance regulator must be constructed.**

The insurance regulator in this case must take on the rule-making authority normally granted to an administrative tribunal. That is, the regulator must be an independent office and must have the authority to make policies and regulations which are binding in the field of automobile insurance. The Regulator should be responsible for the efficient and effective functioning of the auto insurance marketplace. As long as the policies and regulations set by the regulator are in keeping with the letter and spirit of the legislation, the regulator's actions should not be challenged in court.

Fortunately, the FSCO Mandate Review also recommended independent regulatory powers for the new Financial Services Regulatory Authority (FSRA). The government has accepted this advice and the FSRA Act was passed in December which, in summary:

- Establishes FSRA as a Crown agency which brings with it specific accountability requirements such as annual reports, agency business plans, and risk assessments.
- Sets out the object of FSRA to regulate the regulated sectors and requires FSRA to work with the Minister to prepare to carry out that regulatory function.
- Establishes the foundation of the governance structure for the agency by enabling the government to appoint a Board, composed of at least three and no more than 11 directors, and to designate one director as Chair.
- Specifies that the Board will govern FSRA's affairs, including appointing a CEO and making bylaws.

- Helps facilitatethe start-up of the organization by providing for potential loans from the Minister of Finance if required and for assessments from the regulated sectors to finance the new regulator.

The key next step is the appointment of the initial Board to work with the Ministry of Finance on an implementation plan.

Of particular importance in the context of automobile insurance is that the regulator, in addition to its role of consumer protection, must have its responsibilities expanded to include or enhance the following:

- Establishment of programs of care for common injuries and establishment of a roster of qualified independent examination centres. This must be a central role of the regulator. The office will need to acquire staff with medical, health care and rehabilitation expertise to ensure that medical and market practices are constantly monitored and the effectiveness of programs of care and the quality of independent examinations are monitored and adjusted as needed. If this is not done on an ongoing basis the system risks deterioration and a return to the dysfunction it is currently experiencing.

- Establishment of a roster of independent examination centres and overseeing the operation of the centres to ensure that the advice given is objective, medically sound and reasonable in the circumstances.

- Proactive analysis and monitoring of the auto insurance marketplace with changes to policies and practices being proactively promulgated. This will require statistical, analytical, medical and policy expertise to reside with the regulator.

- Conduction of research, working alongside the government, into new and emerging health care challenges such as concussions, chronic pain and post-traumatic stress.

- Monitoring the business practices of insurance companies and providers. If a particular insurance company is exhibiting an unusual number of disputes going into the Dispute Resolution process, the regulator should have the power to audit that insurer with a view to determining if claim handling or management practices are contributing to an unusual level of consumer disagreement with decisions being rendered.

- Monitoring the accident benefit, tort and dispute resolution processes to ensure that they are operating efficiently and that lessons learned are continuously translated into policy changes and improvements to benefit consumers.

The regulator should be required to set objective targets for the insurance marketplace and to report at least annually, or as regularly as seen fit by Cabinet, to the Legislature on

performance versus the targets. The targets should be set in a Memorandum of Agreement between the regulator and the Minister of Finance and should, as an illustration, include targets and improvement plans in areas such as:

- Average number of days to restore accident victims to health.
- Level and trend of accident victims acquiring permanent impairments.
- Average number and percentage of claims going to dispute resolution.
- Trend and number of benefit claims compared with automobile accidents in the province.
- Comparison of premium rates vs. other provinces.
- Average settlement costs in the no-fault and tort portions of the system, and the amount of funds going directly to medical and other needs of claimant's vs. examination, legal and other overhead costs.

### Recommendations

**31. A new, independent regulator with its own board of directors for automobile insurance be established either as part of the new Financial Services Regulatory Authority or a new separate office specifically for auto insurance.**

**32. The Insurance Act and regulations should be amended to include only broad principles and entitlements for benefits. The regulator should be responsible for interpreting the legislation and, following appropriate consultation with stakeholders, creating policies, guidelines and rules that are enforceable and not subject to challenge in the courts as long as they are in keeping with the letter and spirit of the legislation.**

**33. The new regulator needs to be equipped with the staff and expertise to act as a central governor over the automobile insurance marketplace including the conduct of all the players and providers within that marketplace.**

**34. The new regulator should be required to set standards of performance for the marketplace and to be accountable to the government for meeting those targets.**

## Role of Insurance Companies

Insurers do carry a share of the blame for their reputation as being difficult to deal with. In a new system the role of insurance companies will also have to change. They must move from an approach of "closing a claim" to actually providing appropriate medical care and income support to injured parties. This after all is the fundamental intent of the legislation. During my inquiries I was surprised by how little effort, overall, the insurance companies were making to manage health care for their clients instead of managing costs. The argument they presented was that they were effectively precluded from directly helping their clients due to the presence of lawyers who acted as gatekeepers. However, a large part of their clients, more than half, did not come to the insurers with a lawyer in the first instance. I believe that insurers will need to change their mind set and approach to their clients.

**Insurance companies will also have to change.**

Insurance companies must stop seeking to close claims via a cash settlement, something that changes the focus from health care to cash. Injured persons should be able to return for additional care as needed in accordance with the terms of the insurance policy.

Insurance companies will have to equip themselves with staff who have an appropriate level of medical and rehabilitation expertise. Their front line staff must become "case managers" rather than "claims adjusters." They need to monitor the effectiveness of health care providers and give feedback to both providers and the regulator on issues or conditions which can improve care for injured persons or remove barriers to early and efficient care.

They will need to establish an internal appeals function and they will need to monitor the reasons and outcomes of appeals and improve their management of claims accordingly.

Following a goal that is aligned directly with the intent of the legislation and focusing on the client's needs rather than on costs will yield significant results both in the value delivered to customers as well as reducing costs.

They will also need to innovate and compete on service and cost which is a role that would ensure their continued relevance and value and which most of them would welcome. The leading insurers of auto insurance, collectively represent a deep and formidable pool of talent. In a marketplace structured to take advantage of this resource, and with the right attitude, both the insurers and consumers can derive tremendous value.

### Recommendation

**35. Insurance companies must change their role from managing costs to delivering care to their customers. They will need to change their claims management and related practices in the process. They will also need to innovate and compete on service and cost.**

# Appendix I

## AUTO SECTOR GROUPS CONSULTED

Note: Consultation does not mean endorsement. The opinions expressed in this report are entirely my own, unless they have been clearly attributed to a third party.

### CONSUMERS:

Fair Association of Victims for Accident Insurance Reform (FAIR)

### GOVERNMENT:

Alberta Treasury Board

Brian Jarvis, Former VP – Insurance Corporation of British Columbia

Financial Services Commission of Ontario

Florence Holden – Financial Services Tribunal

Ministry of Finance

Ministry of Health and Long-Term Care

Société de l'assurance automobile du Québec

### HEALTH CARE:

Dr. Pierre Côté – University of Ontario Institute of Technology

Ontario Neurotrauma Foundation

Ontario Physiotherapy Clinic Alliance

Ontario Psychological Association Auto Insurance Subcommittee

Ontario Rehab Alliance

**INSURERS:**

Aviva Canada

Canadian Association of Direct Relationship Insurers

Desjardins General Insurance Group

Insurance Bureau of Canada

Intact Insurance Company (Ontario and Alberta)

The Cooperators Group

TD General Insurance Company

Travelers Canada (Ontario and Hartford)

Workplace Safety and Insurance Board

**LEGAL:**

Justice Douglas Cunningham

Justice Warren Winkler

Lee Samis – Samis + Samis

Ontario Trial Lawyers Association

**MISCELLANOUS:**

Ben Kosic – CANATICS

Holly Bakke, former New Jersey Commissioner – Department of Banking and Insurance

George Cooke – Martello Associates Consulting

Rob Sampson

Willie Handler – Willie Handler and Associates

# Appendix II

## CATASTROPHIC IMPAIRMENT – ONTARIO REGULATION 34/10: STATUTORY ACCIDENT BENEFITS SCHEDULE – EFFECTIVE SEPTEMBER 1, 2010

### Catastrophic impairment

3.1 (1) For the purposes of this Regulation, an impairment is a catastrophic impairment if an insured person sustains the impairment in an accident that occurs on or after June 1, 2016 and the impairment results in any of the following:

1. Paraplegia or tetraplegia that meets the following criteria:

   i. The insured person's neurological recovery is such that the person's permanent grade on the ASIA Impairment Scale, as published in Marino, R.J. et al., *International Standards for Neurological Classification of Spinal Cord Injury*, Journal of Spinal Cord Medicine, Volume 26, Supplement 1, Spring 2003, can be determined.

   ii. The insured person's permanent grade on the ASIA Impairment Scale is or will be,

   A. A, B or C, or

   B. D, and

      1. the insured person's score on the Spinal Cord Independence Measure, Version III, item 12 (Mobility Indoors), as published in Catz, A., Itzkovich, M., Tesio L. et al, *A multicentre international study on the Spinal Cord Independence Measure, version III: Rasch psychometric validation*, Spinal Cord (2007) 45, 275-291 and applied over a distance of up to 10 metres on an even indoor surface is 0 to 5,

      2. the insured person requires urological surgical diversion, an implanted device, or intermittent or constant catheterization in order to manage a residual neuro-urological impairment, or

      3. the insured person has impaired voluntary control over anorectal function that requires a bowel routine, a surgical diversion or an implanted device.

2. Severe impairment of ambulatory mobility or use of an arm, or amputation that meets one of the following criteria:

i. Trans-tibial or higher amputation of a leg.

ii. Amputation of an arm or another impairment causing the total and permanent loss of use of an arm.

iii. Severe and permanent alteration of prior structure and function involving one or both legs as a result of which the insured person's score on the Spinal Cord Independence Measure, Version III, item 12 (Mobility Indoors), as published in Catz, A., Itzkovich, M., Tesio L. et al, *A multicentre international study on the Spinal Cord Independence Measure, version III: Rasch psychometric validation*, Spinal Cord (2007) 45, 275-291 and applied over a distance of up to 10 metres on an even indoor surface is 0 to 5.

3. Loss of vision of both eyes that meets the following criteria:

i. Even with the use of corrective lenses or medication,

A. visual acuity in both eyes is 20/200 (6/60) or less as measured by the Snellen Chart or an equivalent chart, or

B. the greatest diameter of the field of vision in both eyes is 20 degrees or less.

ii. The loss of vision is not attributable to non-organic causes.

4. If the insured person was 18 years of age or older at the time of the accident, a traumatic brain injury that meets the following criteria:

i. The injury shows positive findings on a computerized axial tomography scan, a magnetic resonance imaging or any other medically recognized brain diagnostic technology indicating intracranial pathology that is a result of the accident, including, but not limited to, intracranial contusions or haemorrhages, diffuse axonal injury, cerebral edema, midline shift or pneumocephaly.

ii. When assessed in accordance with Wilson, J., Pettigrew, L. and Teasdale, G., Structured Interviews for the Glasgow Outcome Scale and the Extended Glasgow Outcome Scale: Guidelines for Their Use, Journal of Neurotrauma, Volume 15, Number 8, 1998, the injury results in a rating of,

A. Vegetative State (VS or VS*), one month or more after the accident,

B. Upper Severe Disability (Upper SD or Upper SD*) or Lower Severe Disability (Lower SD or Lower SD*), six months or more after the accident, or

C. Lower Moderate Disability (Lower MD or Lower MD*), one year or more after the accident.

5. If the insured person was under 18 years of age at the time of the accident, a traumatic brain injury that meets one of the following criteria:

i. The insured person is accepted for admission, on an in-patient basis, to a public hospital named in a Guideline with positive findings on a computerized axial tomography scan, a magnetic resonance imaging or any other medically recognized brain diagnostic technology indicating intracranial pathology that is a result of the accident, including, but not limited to, intracranial contusions or haemorrhages, diffuse axonal injury, cerebral edema, midline shift or pneumocephaly.

ii. The insured person is accepted for admission, on an in-patient basis, to a program of neurological rehabilitation in a paediatric rehabilitation facility that is a member of the Ontario Association of Children's Rehabilitation Services.

iii. One month or more after the accident, the insured person's level of neurological function does not exceed category 2 (Vegetative) on the King's Outcome Scale for Childhood Head Injury as published in Crouchman, M. et al, *A practical outcome scale for paediatric head injury*, Archives of Disease in Childhood, 2001: 84: 120-124.

iv. Six months or more after the accident, the insured person's level of neurological function does not exceed category 3 (Severe disability) on the King's Outcome Scale for Childhood Head Injury as published in Crouchman, M. et al, *A practical outcome scale for paediatric head injury*, Archives of Disease in Childhood, 2001: 84: 120-124.

v. Nine months or more after the accident, the insured person's level of function remains seriously impaired such that the insured person is not age-appropriately independent and requires in-person supervision or assistance for physical, cognitive or behavioural impairments for the majority of the insured person's waking day.

6. Subject to subsections (2) and (5), a physical impairment or combination of physical impairments that, in accordance with the American Medical Association's Guides to the Evaluation of Permanent Impairment, 4th edition, 1993, results in 55 per cent or more physical impairment of the whole person.

7. Subject to subsections (2) and (5) a mental or behavioural impairment, excluding traumatic brain injury, determined in accordance with the rating methodology in Chapter 14, Section 14.6 of the American Medical Association's Guides to the Evaluation of Permanent Impairment, 6th edition, 2008, that, when the impairment score is combined with a physical impairment described in paragraph 6 in accordance with the combining requirements set out in the Combined Values Table of the American Medical Association's Guides to the Evaluation of Permanent Impairment, 4th edition, 1993, results in 55 percent or more impairment of the whole person.

8. Subject to subsections (3) and (5), an impairment that, in accordance with the American Medical Association's Guides to the Evaluation of Permanent Impairment, 4th edition, 1993 results in a class 4 impairment (marked impairment) in three or more areas of function that precludes useful functioning or a class 5 impairment (extreme impairment) in one or more areas of function that precludes useful functioning, due to mental or behavioural disorder. O. Reg. 251/15, s. 3; O. Reg. 116/16, s. 1.

(2) Paragraphs 6 and 7 of subsection (1) do not apply in respect of an insured person who sustains an impairment as a result of an accident unless,

(a) two years have elapsed since the accident; or

(b) an assessment conducted by a physician three months or more after the accident determines that,

(i) the insured person has a physical impairment or combination of physical impairments determined in accordance with paragraph 6 of subsection (1), or a combination of a mental or behavioural impairment and a physical impairment determined in accordance with paragraph 7 of subsection (1) that results in 55 per cent or more impairment of the whole person, and

(ii) the insured person's condition is unlikely to improve to less than 55 per cent impairment of the whole person. O. Reg. 251/15, s. 3.

(3) Paragraph 8 of subsection (1) does not apply in respect of an insured person who sustains an impairment as a result of the accident unless,

(a) two years have elapsed since the accident; or

(b) a physician states in writing that the insured person's impairment is unlikely to improve to less than a class 4 impairment (marked impairment) in three or more areas of function that precludes useful functioning, due to mental or behavioural disorder. O. Reg. 251/15, s. 3.

(4) Subsection (5) applies to an insured person who was under the age of 18 at the time of the accident and whose impairment is not a catastrophic impairment within the meaning of subsection (1). O. Reg. 251/15, s. 3.

(5) If the insured person's impairment can reasonably be believed to be a catastrophic impairment for the purposes of paragraph 6, 7 or 8 of subsection (1), the impairment shall be deemed to be the impairment referred to in paragraph 6, 7 or 8 of subsection (1) that is most analogous to the impairment, after taking into consideration the developmental implications of the impairment. O. Reg. 251/15, s. 3.

# Appendix III

## EXAMINATION CLAIMS EXPERIENCE (PRIVATE PASSENGER VEHICLES) BY ACCIDENT YEAR

| | 2004 | 2009 | 2010 | 2012 | 2013 |
|---|---|---|---|---|---|
| Number of examination claims | 36,448 | 47,375 | 48,970 | 31,070 | 36,127 |
| Number of claims per 100 insured vehicles | 0.615 | 0.73 | 0.746 | 0.459 | 0.527 |
| Accident benefits earned vehicles | 5,926,718 | 6,492,051 | 6,563,999 | 6,774,926 | 6,856,005 |
| Average cost of examinations per insured vehicle | $41.94 | $130.34 | $129.05 | $41.74 | $50.60 |
| Total examination costs | $248.6 million | $846.2 million | $847.1 million | $282.8 million | $346.9 million |
| Total accident benefits claims costs | $1.60 billion | $3.81 billion | $3.78 billion | $1.92 billion | $2.15 billion |

*Source: 2013 General Insurance Statistical Agency exhibits for private passenger vehicles.*

# Appendix IV

## INCOME REPLACEMENT BENEFITS – ONTARIO REGULATION 34/10: STATUTORY ACCIDENT BENEFITS SCHEDULE – EFFECTIVE SEPTEMBER 1, 2010

### Income Replacement Benefits

**Interpretation**

4. (1) In this Part,

"gross employment income" means salary, wages and other remuneration from employment, including fees and other remuneration for holding office, and any benefits received under the *Employment Insurance Act* (Canada), but excludes any retiring allowance within the meaning of the *Income Tax Act* (Canada) and severance pay that may be received; ("revenu brut d'emploi")

"gross weekly employment income" means, in respect of an insured person, the amount of the person's gross annual employment income, as determined under subsection (2), divided by 52; ("revenu brut hebdomadaire d'emploi")

"other income replacement assistance" means, in respect of an insured person who sustains an impairment as a result of an accident,

(a) the amount of any gross weekly payment for loss of income that is received by or available to the person as a result of the accident under the laws of any jurisdiction or under any income continuation benefit plan, other than,

(i) a benefit under the *Employment Insurance Act* (Canada),

(ii) a payment under a sick leave plan that is available to the person but is not being received, and

(iii) a payment under a workers' compensation law or plan that is not being received by the person because the person has elected under the workers' compensation law or plan to bring an action and is not entitled to the payment, and

(b) the amount of any gross weekly payment for loss of income, other than a benefit or payment described in subclauses (a) (i) to (iii) that may be available to the person as a result of the accident under the laws of any jurisdiction or under any income continuation benefit plan but is not being received by the person and for which the person has not made an application. ("autre assistance au titre du remplacement du revenu") O. Reg. 34/10, s. 4 (1).

(2) The gross annual employment income of an insured person is determined as follows:

1. In the case of a person referred to in subparagraph 1 i of subsection 5 (1) who was not a self-employed person at any time during the four weeks before the accident, the person's gross annual employment income is whichever of the following amounts the person designates:

i. The person's gross employment income for the four weeks before the accident, multiplied by 13.

ii. The person's gross employment income for the 52 weeks before the accident.

2. Subject to paragraph 3, the person's gross annual employment income is his or her gross employment income for the 52 weeks before the accident if,

i. the person qualifies for a benefit under subparagraph 1 i of subsection 5 (1) and was a self-employed person at any time during the four weeks before the accident, or

ii. the person qualifies for a benefit under subparagraph 1 ii of subsection 5 (1).

3. If the person described in subparagraph 2 i was self-employed for at least one year before the accident, the person may designate as his or her gross annual employment income the amount of his or her gross employment income during the last fiscal year of the business that ended on or before the day of the accident. O. Reg. 34/10, s. 4 (2); O. Reg. 370/10, s. 1.

(3) A self-employed person's weekly income or loss from self-employment at the time of the accident is the amount that would be 1/52 of the amount of the person's income or loss from the business for the last completed taxation year as determined in accordance with Part I of the *Income Tax Act* (Canada). O. Reg. 34/10, s. 4 (3).

(4) A self-employed person's loss from self-employment after an accident is determined in the same manner as losses from the business in which the person was self-employed would be determined under subsection 9 (2) of the *Income Tax Act* (Canada) without making any deductions for,

(a) any expenses that were not reasonable or necessary to prevent a loss of revenue;

(b) any salary expenses paid to replace the self-employed person's active participation in the business, except to the extent that the expenses are reasonable in the circumstances; and

(c) any non-salary expenses that are different in nature or greater than the non-salary expenses incurred before the accident, except to the extent that those expenses are reasonable in the circumstances and necessary to prevent or reduce any losses resulting from the accident. O. Reg. 34/10, s. 4 (4).

(5) If, under the *Income Tax Act* (Canada) or legislation of another jurisdiction that imposes a tax calculated by reference to income, a person is required to report the amount of his or her income, the person's income before an accident shall be determined for the purposes of this Part without reference to any income the person has failed to report contrary to that Act or legislation. O. Reg. 34/10, s. 4 (5).

(6) The amount of a person's gross annual employment income and the amount of the person's income or loss from self-employment may be adjusted for the purposes of this Part to reflect any subsequent change in the amount determined by the Canada Revenue Agency under the *Income Tax Act* (Canada) or by the relevant government or agency under the legislation of another jurisdiction that imposes a tax calculated by reference to income. O. Reg. 34/10, s. 4 (6).

**Eligibility criteria**

5. (1) The insurer shall pay an income replacement benefit to an insured person who sustains an impairment as a result of an accident if the insured person satisfies one or both of the following conditions:

1. The insured person,

i. was employed at the time of the accident and, as a result of and within 104 weeks after the accident, suffers a substantial inability to perform the essential tasks of that employment, or

ii. was not employed at the time of the accident but,

A. was employed for at least 26 weeks during the 52 weeks before the accident or was receiving benefits under the *Employment Insurance Act* (Canada) at the time of the accident,

B. was at least 16 years old or was excused from attending school under the *Education Act* at the time of the accident, and

C. as a result of and within 104 weeks after the accident, suffers a substantial inability to perform the essential tasks of the employment in which the insured person spent the most time during the 52 weeks before the accident.

2. The insured person,

i. was a self-employed person at the time of the accident, and

ii. suffers, as a result of and within 104 weeks after the accident, a substantial inability to perform the essential tasks of his or her self-employment. O. Reg. 34/10, s. 5 (1).

(2) Despite subsection (1), an insured person is not eligible to receive income replacement benefits if he or she is eligible to receive and has elected under section 35 to receive either a non-earner benefit or a caregiver benefit under this Part. O. Reg. 34/10, s. 5 (2).

**Period of benefit**

6. (1) Subject to subsection (2), an income replacement benefit is payable for the period in which the insured person suffers a substantial inability to perform the essential tasks of his or her employment or self-employment. O. Reg. 34/10, s. 6 (1).

(2) The insurer is not required to pay an income replacement benefit,

(a) for the first week of the disability; or

(b) after the first 104 weeks of disability, unless, as a result of the accident, the insured person is suffering a complete inability to engage in any employment or self-employment for which he or she is reasonably suited by education, training or experience. O. Reg. 34/10, s. 6 (2).

**Amount of weekly income replacement benefit**

7. (1) The weekly amount of an income replacement benefit payable to an insured person who becomes entitled to the benefit before his or her 65th birthday is the lesser of “A” and “B” where,

“A” is the weekly base amount determined under subsection (2) less the total of all other income replacement assistance, if any, for the particular week the benefit is payable, and

“B” is $400 or, if an optional income replacement benefit referred to in section 28 has been purchased and applies to the person, the amount fixed by the optional benefit. O. Reg. 34/10, s. 7 (1).

(2) For the purposes of subsection (1), the weekly base amount in respect of an insured person is determined as follows:

1. Determine whichever of the following amounts is applicable:

i. 70 per cent of the amount, if any, by which the sum of the insured person's gross weekly employment income and weekly income from self-employment exceeds the amount of the insured person's weekly loss from self-employment, if the weekly income replacement benefit is for one of the first 104 weeks of disability, or

ii. the greater of the amount determined for the purposes of subparagraph i and $185, if the weekly income replacement benefit is for a week for which the person is entitled to receive an income replacement benefit after the first 104 weeks of disability.

2. To the amount determined under paragraph 1, add 70 per cent of the amount of the insured person's weekly loss from self-employment that he or she incurs as a result of the accident. O. Reg. 34/10, s. 7 (2).

(3) The insurer may deduct from the amount of an income replacement benefit payable to an insured person,

(a) 70 per cent of any gross employment income received by the insured person as a result of being employed after the accident and during the period in which he or she is eligible to receive an income replacement benefit; and

(b) 70 per cent of any income from self-employment earned by the insured person after the accident and during the period in which he or she is eligible to receive an income replacement benefit. O. Reg. 34/10, s. 7 (3).

(4) The insurer shall pay an expense incurred by or on behalf of an insured person for the preparation of a report for the purpose of calculating the person's income from employment or self-employment if all of the following conditions are satisfied:

1. The insured person is applying for an income replacement benefit under this Part that is based on the employment or self-employment considered in the report.

2. The report is prepared by a member of a designated body within the meaning of the *Public Accounting Act, 2004*.

3. The expense is reasonable and necessary for the purpose of determining the insured person's entitlement to an income replacement benefit. O. Reg. 34/10, s. 7 (4); O. Reg. 289/10, s. 2.

(5) The insurer is not required to pay more than a total of $2,500 for the preparation of one or more reports under subsection (4) in respect of an insured person. O. Reg. 34/10, s. 7 (5).

**Adjustment after age 65**

8. (1) If a person is receiving an income replacement benefit immediately before his or her 65th birthday, the weekly amount of the benefit is adjusted, on the later of the day of the person's 65th birthday and the second anniversary of the day the person began receiving the benefit, to the amount determined in accordance with the following formula:

$$C \times 0.02 \times D$$

in which,

"C" is the weekly amount of the income replacement benefit that the person was entitled to receive immediately before the adjustment, before any deductions permitted by subsection 7 (3),

"D" is the lesser of,

(a) 35, and

(b) the number of years during which the person qualified for the income replacement benefit before the adjustment is made.

O. Reg. 34/10, s. 8 (1).

(2) Despite section 6, an income replacement benefit that has been adjusted under subsection (1) is payable, without any deductions under clause 7 (3) (a) or (b), until the person dies. O. Reg. 34/10, s. 8 (2).

**If entitlement first arises on or after 65th birthday**

9. (1) If an insured person becomes entitled to receive an income replacement benefit on or after his or her 65th birthday,

(a) subject to clause 6 (2) (a) and despite clause 6 (2) (b), the insured person is entitled to an income replacement benefit for not more than 208 weeks after becoming entitled to the benefit; and

(b) the weekly amount of the benefit is the weekly amount of the income replacement benefit otherwise determined under section 7 before any deductions permitted by subsection 7 (3), multiplied by the factor set out in Column 2 of the Table to this subsection opposite the number of weeks that have elapsed since the person became entitled to receive the benefit.

TABLE

| Column 1<br><br>Number of weeks since Entitlement Arose | Column 2<br><br>Factor |
|---|---|
| Less than 52 weeks | 1.0 |
| 52 weeks or more but less than 104 weeks | 0.8 |
| 104 weeks or more but less than 156 weeks | 0.6 |
| 156 weeks or more but less than 208 weeks | 0.3 |

O. Reg. 34/10, s. 9 (1).

(2) No deduction may be made under clause 7 (3) (a) or (b) from an income replacement benefit determined under subsection (1). O. Reg. 34/10, s. 9 (2).

**No violation of *Human Rights Code***

10. The age distinctions in sections 8 and 9 apply despite the *Human Rights Code*. O. Reg. 34/10, s. 10.

**Temporary return to employment**

11. A person receiving an income replacement benefit may return to or start employment or self-employment at any time during the first 104 weeks for which he or she is receiving the benefit without affecting his or her entitlement to resume receiving any benefits to which he or she is entitled under this Part if, as a result of the accident, he or she is unable to continue the employment or self-employment. O. Reg. 34/10, s. 11.

# Appendix V

## GENERAL INSURANCE STATISTICAL AGENCY – PRIVATE PASSENGER VEHICLES ACCIDENT BENEFITS CLAIMS FOR MEDICAL AND REHABILITATION – 2013

### Breakdown of costs between Medical Care and Other

| | Medical Care | Other | Medical Care %** | Other % |
|---|---|---|---|---|
| Medical | $898,987,620 | | 50% | |
| Visitation | | $4,976,449 | | 0.28% |
| Dependant Care | | $38,751 | | 0% |
| Housekeeping | | $34,685,455 | | 2% |
| Examination | | $335,134,533 | | 19% |
| Rehab - other than renovation | $89,186,509 | | 5% | |
| Renovation Rehab | $33,772,102 | | 2% | |
| Attendant Care | $381,312,138 | | 21% | |
| Replacement etc.* | $3,514,809 | | 0% | |
| All Med/Rehab | $1,406,773,177 | $374,835,188 | 79% | 21% |

**Total Med/Rehab Expenditure $1,781,608,366**

** Replacement of clothing, hearing aids, glasses and other devices*

*** Percentage are over total med/rehab amount*

Notes:

- This segregation of amounts is based on the definitions of the accident benefits coverages.
- When settlements are paid, insurers allocate the amounts to one of the coverages above.

- To determine how much of any of these payments go to the actual purpose it is meant for is not possible given the information available.
- The allocation of an expenditure category to "Other" does not necessarily imply that the expenditure does not contribute to the well being of the individual in medical terms. For example visitation costs for relatives to visit the injured are not direct medical expenditures, however may contribute to their emotional well being.

# Appendix VI

## INFORMATION SUPPLIED BY THE FINANCIAL SERVICES COMMISSION OF ONTARIO

### Dispute resolution services – mediation and arbitration from 2011/12 to 2015/16

| | Mediation | Arbitration |
|---|---|---|
| A. Total applications less admin closures | 115,908 | |
| B. Full and partial Settlements | 54,790 | |
| Total value of full and partial settlements | $777,400,000 | |
| Annual average | $17,143 | |
| C. Settlements with zero value | (9,523) | |
| D. Move to arbitration | | 44,599 |
| E. Offline[34] | | 25,701[35] |
| F. Failed Settlements | | 61,118 |
| G. Total | 115,908 | |

### Conclusions

| | |
|---|---|
| A. Average number of claims going to mediation | 23,200 |
| B. Average annual settled at mediation with value >$0 | ((B-C)/A); 39% |
| a. Average annual value | $155,500,000 |
| b. Annual average value of settlement | $17,143 |
| C. Settlements with zero value (annual average / %) | 2,000; (C/A) 8.2% |
| D. Moved to arbitration (annual average / %) | 9,000; (D/A) 38% |
| E. Moved off line (annual average / %) | 5,140; (E/A) 22% |

Over a five-year period (2011-2015), the average number of applications going into mediation at FSCO annually was 23,200 (or about 35 per cent of total claims).

**Declined amounts as a % of proposed amounts – OCF18[36]**

| | Proposed Amounts* | Declined Amounts** | Declined for Reason: Not Reasonable or Necessary | Percentage Declined |
|---|---|---|---|---|
| 2011H1 | $331,346,422 | $147,703,454 | $38,236,804 | 45% |
| 2011H2 | $321,560,134 | $120,913,044 | $31,386,306 | 38% |
| 2012H1 | $259,966,717 | $91,108,386 | $25,784,396 | 35% |
| 2012H2 | $295,848,707 | $95,396,549 | $28,035,888 | 32% |
| 2013H1 | $264,960,375 | $81,626,632 | $22,915,597 | 31% |
| 2013H2 | $317,989,691 | $97,928,001 | $29,145,141 | 31% |
| 2014H1 | $257,335,801 | $73,690,588 | $20,959,038 | 29% |
| 2014H2 | $269,959,037 | $70,281,773 | $18,039,737 | 26% |
| 2015H1 | $212,584,457 | $52,652,108 | $14,193,819 | 25% |
| 2015H2 | $185,646,061 | $42,058,878 | $10,173,917 | 23% |
| 2016H1 | $53,299,204 | $13,185,308 | $2,093,520 | 25% |

*Source: HCAI*

*Note: Later year data is still developing.*

** Proposed Amounts: Sum total of all amounts proposed for treatment.*

*** Declined Amounts are for the following reasons:*

- *Diagnosis indicates that MIG is appropriate*
- *Diagnosis Is Inconsistent With The Provider Type*
- *Procedure is Inconsistent with the Diagnosis*
- *Diagnosis Is Inconsistent With The Cause of Loss*
- *Not Reasonable and Necessary*
- *Service/Product Is Inconsistent With The Cause of Loss*
- *Fee Exceeds Reasonable Fees for Product or Service*
- *Fee Exceeds Maximum Allowed*
- *Service/Procedure Time Adjustment*
- *Policy Coverage Limits Exceeded*
- *Good or service not covered*
- *There is a conflict of interest*
- *Other please provide an explanation*

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[1] Meckbach, Greg, Canadian Underwriter, "'Lots of room for improvement' with new Ontario auto dispute resolution system: Judge Cunningham," http://www.canadianunderwriter.ca/insurance/lots-room-improvement-new-ontario-auto-dispute-resolution-system-judge-cunningham-1004102925/, November 2, 2016.

[2] Sources of data for Figure 1 (The cited General Insurance Statistical Agency data represents only transactions related to private passenger vehicles.):

a – Preliminary 2014 Ontario Road Safety Annual Report Selected Statistics, Ministry of Transportation.

b – Ontario Road Safety Annual Report 2013, Ministry of Transportation.

c – 2013 accident year, 2015 General Insurance Statistical Agency (GISA) loss ratio exhibit for private passenger vehicles. Accident benefits claims is estimated based on GISA actuarial calculations.

d – 2013 FSCO dispute resolution system data.

e – 2013 accident year data from FSCO DRS group.

f – 2013 accident year, 2015 GISA loss ratio exhibit for private passenger vehicles. Number is estimated based on GISA actuarial calculations.

g – 2013 accident year data from Ontario Health Claims Database (HCDB), September 2016 report. Please note that the assessments include both insurer initiated as well as provider initiated. A claimant could have both, however are counted once. Also note that provider initiated assessments may include a count for assessments that are offered as part of treatment.

h – 2013 annual average based on business information reported to Health Claims for Auto Insurance (HCAI).

i – Registered Insurance Brokers of Ontario, as of August 2014; not specific to Auto Insurance.

[3] Ontario Road Safety Annual Report – 2013

[4] FSCO Three Year Review, December 2014, Chart 9, p. 41, http://www.fsco.gov.on.ca/en/auto/3yr-review/Documents/aoda-3yr-review.pdf

[5] O. Reg. 34/10, s. 16 (1).

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[10] *Automobile Insurance Third Party Liability Bodily Injury Closed Claim Study in Ontario* conducted by Pinnacle Actuarial Resources, Inc (Pinnacle Study), August 13, 2014, p. 4, https://www.fsco.gov.on.ca/en/auto/Documents/abbreviated-report.pdf
[11] FSCO Three Year Review, December 2014, Table 5, p. 40, http://www.fsco.gov.on.ca/en/auto/3yr-review/Documents/aoda-3yr-review.pdf
[12] Association of Workers' Compensation Boards of Canada Key Statistical Measures Data, 2015, http://awcbc.org/?page_id=9759&_sm_au_=iVV5R7SWWnFtj1RP
[13] Ontario Workplace Safety and Insurance Board, 2015 Economic Statement, available at www.wsib.on.ca
[14] Meckbach, Greg, Canadian Underwriter, "'Lots of room for improvement' with new Ontario auto dispute resolution system: Judge Cunningham," http://www.canadianunderwriter.ca/insurance/lots-room-improvement-new-ontario-auto-dispute-resolution-system-judge-cunningham-1004102925/, November 2, 2016.
[15] GISA Examination Claims Experience. See Appendix III.
[16] By the Numbers, Ontario Workplace Safety and Insurance Board Health Care Benefit Payments by Service Categories by Payment Year www.wsib.on.ca
[17] Cunningham, the Honourable J. Douglas, *Ontario Automobile Insurance Dispute Resolution System Review Final Report* (Cunningham Final Report), p. 6
[18] Insurance Corporation of British Columbia's financial statement
[19] Justice Cunnigham's Interim Report, p. 13
[20] Spine Journal, "Does Early Management of Whiplash-Associated Disorders Assist or Impede Recovery?", Drs. Côté P. and Soklaridis S., p. S276
[21] Porter, Michael E. and Lee, Thomas H., "The Strategy That Will Fix Health Care," Havard Business Review, October 2013.
[22] Ibid.
[23] Ontario Auto Insurance Anti-Fraud Task Force Final Report, p. 28
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[25] Justice Cunnigham's Interim Report, p. 31
[26] Cassidy, J. David et al., "Effect of Eliminating Compensation for Pain and Suffering on the outcome of Insurance Claims for Whiplash Injuries," The New England Journal of Medicine, Volume 342, Number 16, April 20, 2000, p. 1184
[27] Justice Cunnigham's Interim Report, p. 26
[28] Justice Cunnigham's Final Report, p. 5
[29] Justice Cunnigham's Final Report, p. 23
[30] Ontario Automobile Insurance Dispute Resolution System Review Final Report, p. 14
[31] Ontario Auto Insurance Anti-Fraud Task Force Final Report, p. 19
[32] FSCO Three Year Review, December 2014, p. 40, http://www.fsco.gov.on.ca/en/auto/3yr-review/Documents/aoda-3yr-review.pdf
[33] Review of the Mandates of the Financial Services Commission of Ontario, Financial Services Tribunal, and the Deposit Insurance Corporation of Ontario, p. 80
[34] It is unclear how these cases settled, or whether they were settled. Data not available.
[35] The cases that FSCO has no information on how they finally settle, as information is not provided to FSCO, are: 115,908 – 45,608 (Full Settlements) – 44,599 (Proceed to Arbitration) = 25,701.
[36] An OCF 18 is used to make the following claims:

- Ambulance or other goods or services provided on an emergency basis
- Drugs prescribed by a regulated health professional
- Goods with a cost of $250 or less per item
- Dental goods or services

# Financial Reporting Through the Lens of a Property/Casualty Actuary

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# FOREWORD

EY was originally retained by the Casualty Actuarial Society (CAS) to write a text on financial reporting and taxation as it affects reserving and statutory reporting for use in the CAS basic education process. The CAS had two key objectives for this text:

1. Replace a number of readings that existed on the CAS *Syllabus of Basic Education* as of 2011 with a single educational publication.
2. Refine the content of the syllabus material to focus on financial accounting and taxation topics that are of particular relevance to the property/casualty actuary.

The CAS specified that the text would focus on the learning objectives contained within the syllabus as of 2011.

This publication has been prepared from an actuary's lens, highlighting those areas of financial reporting and taxation deemed to be relevant by the CAS Syllabus Committee and the authors of this text. The learning objectives contained within the 2011 syllabus provided the underlying direction of the content contained herein. Further, the core content was originally developed based on the NAIC Annual Statement Instructions in 2011.

Subsequently, EY was requested to update the original textbook to:

- Add specific examples to illustrate differences between SAP and GAAP
- Include tax implications of investment strategies
- Reflect the new tax law enacted in the U.S. in December 2017
- Bring IFRS and Solvency II current (to 2018) and include discussion of the NAIC's Own Risk and Solvency Assessment (ORSA)
- Bring Schedule F current (to 2018)
- Provide discussion as to why companies use intercompany pooling arrangements and their impact on surplus
- Reflect any resolution of discrepancies between the NAIC's written and electronic instructions for risk-based capital (RBC) regarding Asset Risk associated with insurance company subsidiaries
- Bring the Canadian chapter current (to 2018)
- Reflect comments and questions received by the CAS from candidates and others, as well as errata previously submitted

This version of the text reflects the above specified changes. In doing so, we have updated the Annual Statement for Fictitious Insurance Company to 2018. No other changes have been incorporated, other than minor typographical edits. Further, we have not accounted for any changes to the Exam 6 Syllabus, other than those resulting in the above requested updates from the CAS. The Exam 6 learning

objectives and examination material may have changed and may continue to change in the future. Therefore, the content of this publication may need to be updated in the future.

This text does not represent the position of EY or the authors with respect to interpretations of accounting or tax guidance. Nor is this text intended to be a substitute for authoritative accounting or insurance regulatory and related guidance issued by the National Association of Insurance Commissioners (NAIC), American Institute of Certified Public Accountants (AICPA), Financial Accounting Standards Board (FASB), Governmental Accounting Standards Board (GASB), Securities and Exchange Commission (SEC), Internal Revenue Service (IRS), Chartered Professional Accountants Canada (CPA Canada)[1], International Federation of Accountants (IFAC), Global Accounting Alliance (GAA), International Financial Reporting Standards Foundation (IFRS)/International Accounting Standards Board (IASB), or any other regulatory body. Authoritative guidance from regulatory bodies trumps the writings contained herein. Furthermore, accounting standards are continuously evolving. As a result, readers of this text should be aware that the accounting standards referenced in this publication may have changed since the time of writing. The CAS may request that this publication be updated to reflect such changes.

While the authors of this publication have taken reasonable measures to verify references, content and calculations, it is possible that we may have inadvertently missed something. We would appreciate being informed of any inaccuracies so that an errata sheet(s) may be issued, and/or future editions of this publication may be corrected.

This publication has been prepared for general informational purposes only, and is not intended to be relied upon as accounting, tax or other professional advice. It is not intended to be a substitute for detailed research or the exercise of professional judgement. Neither Ernst & Young LLP nor any other member of the global Ernst & Young organization can accept any responsibility for loss occasioned to any person acting or refraining from action as a result of any material in this publication. Please refer to your advisors for specific advice.

[1] In October 2014, the Certified General Accountants Association of Canada (CGA-Canada) joined Chartered Professional Accountants of Canada (CPA Canada) to complete the integration of the country's national accounting bodies. CPA Canada was established the previous year by the Canadian Institute of Chartered Accountants (CICA) and The Society of Management Accountants of Canada (CMA Canada).

# ACKNOWLEDGEMENTS

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The authors would also like to acknowledge those individuals within EY who assisted us by creating certain content, tables and exhibits and performing editorial reviews. These individuals include Dave Osborn, Kishen Patel, and Yan Ren. Particular credit goes to David Payne, who rewrote Chapter 19. *Risk-Based Capital*, Ian Sterling and Mike McComis, who contributed to Part VI. *Differences from Statutory to other Financial/Regulatory Reporting Frameworks in the U.S.*, and Liam McFarlane and Shams Munir, who contributed to Part VII. *Canadian-Specific Reporting*.

Finally, the authors of this text would like to express their deep gratitude to the actuarial professionals who have invested their time writing publications for the CAS examination process. Although this publication will serve as a consolidation of many of the papers formerly on the Exam 6 Syllabus, we acknowledge the significant contributions that those papers have made in advancing the actuarial profession, as well as the knowledge of the authors of the text.

In preparing *Financial Reporting through the Lens of a Property/Casualty Actuary*, we relied extensively on the following publications and resources:

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# PART I. INTRODUCTION

## CHAPTER 1. FINANCIAL REPORTING IN THE PROPERTY/CASUALTY INSURANCE INDUSTRY

### IMPORTANCE AND OBJECTIVES OF FINANCIAL REPORTING

Financial reporting serves as a means to communicate a company's financial results and health. Financial reporting is accomplished through a series of financial statements that consolidate a company's transactions and events into a summarized form under specified accounting rules. The purpose of these rules is to provide companies with a framework for measuring and recording transactions and the related revenue, expenses, assets and liabilities on a consistent basis.

Financial reports enable stakeholders and regulators to track financial performance, compare a company's performance to others and make informed financial decisions under a set of common rules. The stakeholders of an insurance company include policyholders, claimants, investors, directors of the board and company management. The regulators primarily include state governmental authorities, as we shall see below.

### OVERVIEW OF THE BASES OF FINANCIAL REPORTING (STATUTORY, GAAP, IFRS, TAX, CANADIAN) AND DIFFERENCES IN TERMS OF USE

The accounting standards that govern financial reporting for insurance companies are numerous and complex. As we write this publication these standards are evolving, and this evolution is resulting in much debate among industry participants. Regardless, the intent of accounting standards is to promote a consistent framework for reporting insurance company transactions such that comparisons of financial performance and health of insurance companies can be made within the industry.

In the U.S., insurance companies are regulated by the individual state governments within which they are licensed to transact business. Within each state government there is an insurance division led by an insurance commissioner, director, superintendent or administrator (commissioner). The National Association of Insurance Commissioners (NAIC) serves as an organization of state regulators that facilitates and coordinates governance across the U.S. The NAIC itself is not a regulator; regulatory authority remains with the individual states. Therefore, model laws and regulations established by the NAIC are not law; individual states have the authority to decide whether to adopt NAIC model laws and regulations.

Statutory Accounting Principles (SAP) is a framework of "accounting principles or practices prescribed or permitted by an insurer's domiciliary state."[2] Most insurance companies are licensed to transact business in more than one state. Having to follow the accounting rules and regulations of each state in

[2] Preamble to the NAIC *Accounting Practices and Procedures Manual,* March 2019 version.

which the company is licensed can be cumbersome and result in inconsistent reporting practices. To minimize the varying complexities of different rules and facilitate commonality in reporting practices, the NAIC adopted Codification of SAP effective January 1, 2001. Codification does not prevent individual state regulation but rather provides a common set of principles that individual states can follow to ease the regulatory burden on companies and promote consistency.

Statements of Statutory Accounting Principles (SSAPs) are published by the NAIC in its *Accounting Practices and Procedures Manual*. The manual includes more than 100 SSAPs and references related statutory interpretations, NAIC model laws and actuarial guidelines which collectively serve as the basis for preparing and issuing statutory financial statements for insurance companies in the U.S. in accordance with, or in the absence of, specific statutes or regulations promulgated by individual states.

From a financial reporting perspective, regulatory oversight by state governments focuses on insurance company solvency to ensure that policyholders receive the protection they are entitled to and claimants receive the applicable compensation for damages incurred. SAP and associated monitoring tools are intended to provide regulators with early warning of deterioration in an insurance company's financial condition. SAP tends to be conservative in order to provide that early warning. For example, certain illiquid assets are not admitted (excluded from the balance sheet) under SAP, despite having economic value.

Generally Accepted Accounting Principles (GAAP) provides another set of common rules under which publicly traded insurance companies and privately held companies report their financial transactions and operating results. GAAP does have certain specialized rules for insurance companies, but unlike SAP, this framework is not built on the principle of conservatism. Rather, the primary focus of GAAP is the presentation of a company's financial results in a manner that more closely aligns with the company's financial performance during the period. Historically, this has been accomplished by matching revenues and expenses. For example, under GAAP, expenses incurred by an insurance company in conjunction with successful acquisition of business are deferred to match the earning of associated premium. In contrast, under SAP, all costs associated with policy acquisition are expensed at the time they are incurred by the insurance company.

The Securities and Exchange Commission (SEC) is the authoritative body for establishing accounting and reporting standards for publicly traded companies in the U.S., including publicly traded insurance or insurance holding companies. As highlighted on the SEC's website, "The mission of the U.S. Securities and Exchange Commission is to protect investors, maintain fair, orderly and efficient markets, and facilitate capital formation."[3] The SEC has designated the Financial Accounting Standards Board (FASB) with the responsibility of developing and establishing GAAP, with the SEC operating in an overall

[3] U.S. SEC, *The Investor's Advocate: How the SEC Protects Investors, Maintains Market Integrity, and Facilitates Capital Formation,* http://www.sec.gov/about/whatwedo.shtml, March 30, 2020.

monitoring role. The FASB is the private organization providing authoritative accounting guidance for nongovernmental entities.

The Governmental Accounting Standards Board (GASB) is the private organization providing authoritative accounting guidance for the public sector. According to the GASB's website, the GASB "is the independent organization that establishes and improves standards of accounting and financial reporting for U.S. state and local governments ... the official source of generally accepted accounting principles (GAAP) for state and local governments."[4] Although this publication does not discuss accounting for governmental entities, we note that the accounting for such entities differs from the accounting for insurance companies. Knowledge of the GASB as it relates to insurance-related activities of governmental entities is important for the property/casualty actuary who performs actuarial services for the public sector.

The Internal Revenue Service (IRS) is the U.S. government agency responsible for enforcing tax laws and collecting taxes. Every business paying taxes in the U.S. must compute taxable income based on the tax laws passed by Congress and the related regulations issued by the IRS. For insurance companies, the starting point for taxable income is income determined under SAP. SAP income is adjusted based on the provisions of the various tax laws and regulations. While SAP is generally conservative, tax-basis accounting may be more or less conservative depending on how political and other factors affect tax legislation. While some adjustments result in a decrease to taxable income (e.g., tax-exempt income), adjustments specific to the insurance industry tend to focus on the acceleration of income for tax purposes (e.g., the discounting of loss reserves and the reduction of unearned premiums).

The Canadian Institute of Chartered Accountants is the body in Canada that defines Canadian Generally Accepted Accounting Principles (CGAAP). At one time, SAP applied to the preparation of the Annual Return for Canadian-domiciled insurers. However, this is no longer the case, and the financial statements included in the Annual Return are prepared in accordance with CGAAP.

Under CGAAP, policy liabilities can be recorded in accordance with accepted actuarial practice in Canada, which means that the recorded liabilities are discounted to reflect the time value of money and include a provision for adverse deviation.

International Financial Reporting Standards (IFRS) provide an accounting framework used by many countries outside the U.S. IFRS are established by the International Accounting Standards Board (IASB).

IFRS already affects companies in the U.S. that currently have international subsidiaries or are subsidiaries of IFRS filers. At the time of the writing of this publication, IFRS 4, which pertains to the recognition and measurement of insurance contracts, permits insurance companies to report under the current accounting rules of their local country with slight modifications. An example of one such

[4] GASB, *Facts About GASB*, http://www.gasb.org/cs/BlobServer?blobcol=urldata&blobtable=MungoBlobs&blobkey=id&blobwhere=1175824006278&blobheader=application%2Fpdf, 2012.

modification is requiring companies to establish premium deficiency reserves, as needed, regardless of local requirements. Given the current lack of a detailed measurement model under IFRS for insurance contracts, one of the key initiatives of the IASB is the development of a new accounting standard for insurance contracts. We will discuss the standard developed by the IASB (and the FASB developments in this area) and how it differs from the measurement of insurance liabilities today.

## CHAPTER 2. RELEVANCE OF FINANCIAL REPORTING TO THE ACTUARY

### IMPORTANCE AND OBJECTIVES OF FINANCIAL REPORTING

Actuaries estimate the financial impact of insurable events. As such, actuaries need to understand the accounting rules under which the financial impact is being reported. Consider the actuary providing an estimate of an insurance company's unpaid claims for purposes of comparison to recorded loss reserves on the company's balance sheet. If the balance sheet is prepared under Statutory Accounting Principles (SAP), then the loss reserves are recorded on a net of reinsurance basis. If the company's financial statements are prepared under Generally Accepted Accounting Principles (GAAP), then the loss reserves are recorded gross of reinsurance. For comparison purposes, the actuarial estimate of unpaid claims would need to be prepared on a net basis for SAP and gross basis for GAAP. The actuary might also provide an estimate of unpaid claims ceded to the company's reinsurers, for comparison to the reinsurance recoverable amount recorded as an asset on a GAAP basis.

Actuaries providing estimates of unpaid claims on a SAP basis must also be aware of state regulations under which the company is recording its loss reserves. For example, while the National Association of Insurance Commissioners *Accounting Practices and Procedures Manual* permits companies to discount workers' compensation reserves on a tabular basis,[5] certain states have varying requirements with respect to whether and how the tabular discount is applied. For instance, as of December 31, 2018, the state of Montana permitted discounting of both workers' compensation indemnity and medical tabular reserves (excluding LAE) but required use of a specific interest rate in the calculation (4%).[6]

To take this one step further, actuaries issuing Statements of Actuarial Opinion should include a statement within the opinion stating that the company's recorded loss and loss adjustment expense reserves "meet the requirements of the insurance laws of (state of domicile)."[7] The opining actuary is therefore required to read the state regulations and confirm that the recorded reserves meet the state laws.

The accounting convention is not only important to the reserving actuary for an insurance company, but also to actuaries who perform other jobs, including but not limited to the following:

- Working with regulators to monitor the financial health of insurance companies
- Pricing and designing insurance products, including development of profit margins
- Determining capital requirements to support the various risks of an insurer
- Evaluating risk transfer of reinsurance contracts

[5] According to page C-3 of the American Academy of Actuaries, *2018 Property/Casualty Loss Reserve Law Manual*, tabular reserves are defined as "indemnity reserves that are calculated using discounts determined with reference to actuarial tables that incorporate interest and contingencies such as mortality, remarriage, inflation, or recovery from disability applied to a reasonably determinable payment stream. This definition shall not include medical loss reserves or any loss adjustment expense reserves."

[6] American Academy of Actuaries, *Property/Casualty Loss Reserve Law Manual, 2018,* page 250.

[7] NAIC, *Annual Statement Instructions Property/Casualty,* 2018, page 12.

- Assessing reserve adequacy for non-insurance entities, such as organizations that self-insure or retain a portion of their property/casualty insurance exposures
- Preparing tax returns
- Appraising and valuing insurance companies in merger and acquisitions

For each of the above, the result of the work performed will differ depending on the accounting framework used, illustrating the need for actuaries in different disciplines to be knowledgeable about the various accounting and financial reporting frameworks.

## CHAPTER 3. OVERVIEW OF THIS PUBLICATION

ROADMAP

This publication begins with an overview of basic accounting concepts (*Part II. Overview of Basic Accounting Concepts*) and then delves into the fundamental aspects of the statutory Annual Statement and certain supplemental filings, that provide the means for financial reporting in the U.S. under Statutory Accounting Principles (SAP) (*Part III. SAP in the U.S.: Fundamental Aspects of the Annual Statement* and *Part IV. Statutory Filings to Accompany the Annual Statement*). Measurement tools used to evaluate the financial health of a property/casualty insurance company are discussed in *Part V. Financial Health of Property/Casualty Insurance Companies in the U.S.* These tools are particularly important to regulators in monitoring solvency for the purpose of protecting the stakeholders of an insurance company. We then investigate differences between statutory reporting and other financial reporting frameworks in the U.S., namely Generally Accepted Accounting Principles, International Financial Reporting Standards and tax accounting in *Part VI. Differences from Statutory to other Financial/Regulatory Reporting Frameworks in the U.S.* We move on to Canada to provide a discussion of Canadian accounting principles (*Part VII. Canadian-Specific Reporting*). The publication closes with a discussion of the future of SAP and evolution of new accounting frameworks, differentiating between what is "real" and what is only in the discussion phase at the time of publication of this text (*Part VIII. The Future of SAP*).

ANNUAL STATEMENTS REFERENCED THROUGHOUT THE PUBLICATION

The Casualty Actuarial Society (CAS) Syllabus Committee and authors of this publication agreed that it would be helpful for students studying for the CAS exams to be able to rely as much as possible on one insurance company throughout the publication to illustrate the major concepts. For the U.S. examples, the CAS Syllabus Committee has assisted us in creating excerpts of a 2011 Annual Statement for a fictional insurance company named Fictitious Insurance Company (Fictitious). The excerpts of this statement are contained in Appendix I of this publication.

We have relied on the Annual Statement excerpts for Fictitious for the more detailed examples and calculations. We also referenced the National Association of Insurance Commissioners *2011 Property and Casualty Annual Statement Blank*, which was also included on the CAS Exam 6 U.S. Syllabus at the time this publication was originally written. We have updated the dates in the Fictitious Annual Statement to year-end 2018, as well as specific schedules noted in the Foreword of this edition. We recommend that the current version of the Annual Statements (Blank and those for specific companies referenced on the current Exam 6 U.S. Syllabus) be viewed side by side with this publication when reading and working through examples and following the flow of exhibits, notes, interrogatories, and schedules within the Annual Statement.

For Canada, we have used the 2018 aggregate experience of Canadian insurers as published on the website of the Office of the Superintendent of Financial Institutions (OSFI). As with the U.S. chapters, we

recommend that the student have this information by his or her side when reading the Canadian chapters of this publication.

We also acknowledge that there may be differences between exhibits within an Annual Statement; such differences are due to rounding.

BACKGROUND ON FICTITIOUS INSURANCE COMPANY

The authors of this publication felt it important to provide some background information on Fictitious and describe the landscape in which Fictitious was operating during the time period covered when the Annual Statement was originally compiled (December 31, 2011). This will provide additional context for students when reading and interpreting the figures contained therein.

Fictitious is a publicly held property/casualty insurance company in the U.S. As displayed in Table 1, approximately one-third of the company's writings in 2018 were in personal lines markets, with the remainder in commercial markets. Homeowners multiple peril (homeowners) was the largest single line written in 2018 on a net of reinsurance basis (17% of net written premium), followed by workers' compensation (15% of net written premium) and other liability — occurrence (13% of net written premium). The company wrote business in all 50 states in the U.S. and was therefore exposed to natural catastrophes and weather-related events in 2018.

TABLE 1

| Fictitious Insurance Company<br>Distribution of 2018 Written Premium (WP) by Line of Business (USD in 000s) | | | | |
|---|---|---|---|---|
| | **Direct WP $** | **Direct WP %** | **Net WP $** | **Net WP%** |
| Line of Business | | | | |
| Personal lines | | | | |
| Homeowners multiple peril | 4,646 | 16% | 4,555 | 17% |
| Private passenger auto liability | 2,804 | 10% | 2,804 | 10% |
| Private passenger auto physical damage | 1,661 | 6% | 1,665 | 6% |
| Subtotal, personal lines | 9,111 | 32% | 9,024 | 34% |
| Commercial lines | | | | |
| Fire | 3,254 | 11% | 2,484 | 9% |
| Commercial multiple peril (non-liability portion) | 3,243 | 11% | 3,032 | 11% |
| Commercial multiple peril (liability portion) | 1,760 | 6% | 1,645 | 6% |
| Workers' compensation | 4,394 | 15% | 4,022 | 15% |
| Other liability — occurrence | 3,749 | 13% | 3,502 | 13% |
| Commercial auto liability | 2,334 | 8% | 2,250 | 8% |
| Commercial auto physical damage | 651 | 2% | 647 | 2% |
| Fidelity | 138 | 0% | 146 | 1% |
| Subtotal, commercial lines | 19,523 | 68% | 17,728 | 66% |
| Total | 28,634 | 100% | 26,752 | 100% |

Insurers were hit hard by record levels of catastrophe losses in 2017 and 2018, following a sustained period of benign activity from 2012 through 2016. Headline events included hurricane activity in North America (Harvey, Irma and Maria in 2017; Florence and Michael in 2018) and Japan (Jebi, Trami and Mangkhut in 2018). California saw its most costly wildfire season for the second year running, with the Camp Fire alone leading to approximately $10 billion of insured losses.

2017 events in the U.S. are estimated to have cost the (re)insurance industry approximately $106 billion, with a further $50 billion in 2018, significantly exceeding the prior 10-year average of just under $20 billion.[8]

As we shall see through examination of the company's 2018 Annual Statement, Fictitious did not escape the financial impact of the natural catastrophes in the U.S., but surprisingly was relatively unscathed by the events in 2017. During 2018, Fictitious experienced a net loss from underwriting of $2 million, largely due to events including Hurricanes Florence and Michael and the California wildfires. The company's net loss and loss adjustment expense (LAE) ratio for accident year 2018 was about 10 percentage points higher than that for accident year 2017.

[8] https://www.iii.org/article/spotlight-on-catastrophes-insurance-issues, December 20, 2019

When reading this publication and reviewing the 2018 Annual Statement for Fictitious Insurance Company, note that Fictitious tightened its underwriting standards in reaction to the soft insurance market in commercial lines.[9] Despite the company's efforts, soft market conditions also contributed to the increasing loss and LAE ratio in 2018.

[9] A soft market is one where insurance prices are low and therefore insurance is cheaper for the consumer. The insurance industry tends to observe increasing loss ratios in a soft market because the consumer is paying less in premiums for the same level of insurance protection.

# PART II. OVERVIEW OF BASIC ACCOUNTING CONCEPTS

## INTRODUCTION TO PART II

Part II of this publication will provide a detailed discussion on the construction, use and interpretation of an insurance company's financial statements and other financial information. Before beginning that detailed discussion, we will introduce two important accounting topics: primary financial statements and key accounting concepts. Both are recurring topics throughout this publication, and a basic understanding will be helpful to students.

## CHAPTER 4. PRIMARY FINANCIAL STATEMENTS

### PRIMARY FINANCIAL STATEMENTS

Although there are numerous accounting frameworks, they generally rely on a few primary financial statements. Of these, the two most commonly referenced are the balance sheet and the income statement. Other primary financial statements include the statement of capital and surplus (or equity) and the statement of cash flow. The financial statements are accompanied by subsequent pages of notes, which provide additional information that helps explain balances within the financial statements.

### BALANCE SHEET

The balance sheet presents all of a company's assets and liabilities as of a specific point in time. Assets are defined as resources obtained or controlled by a company as a result of past events that have a probable future economic benefit to the company. Liabilities are probable sacrifices of economic benefits arising from present obligations of a company to transfer assets or provide services to other entities in the future as a result of past events. The relationship between the assets and the liabilities of a company is important, because it is a measure of the company's ability to use its assets to fully satisfy its liabilities. The difference between assets and liabilities is generally referred to as net worth (or equity); in the case of an insurance company reporting under Statutory Accounting Principles (SAP), this difference is referred to as statutory surplus (or policyholders' surplus)[10].

One unique aspect of insurance companies' balance sheets is the inherent uncertainty associated with the estimation of the liability for unpaid claims and claim adjustment expenses (loss reserves). While a certain amount of estimation is involved in other industries' accounting, the more significant estimates are generally with respect to asset valuation and collectability and pale in comparison to the uncertainties involved in estimating loss reserves. Actuaries typically have an important role in valuing insurance company liabilities and are therefore critical to the accurate preparation of the balance sheet.

### INCOME STATEMENT

While the balance sheet presents the financial balances of a company at a point in time, the income statement reveals a company's financial results during a specific time period. The general types of accounts that are used as a means to measure these results are revenue and expenses. Revenues are inflows or enhancements of assets or settlement of liabilities (or a combination of both) from delivering goods or services during the specific time period. Expenses are outflows or other use of assets or incurrence of liabilities (or a combination of both) from delivering or producing the goods and services that were provided during the specific time period. The difference between the amount of the revenues and expenses during the period is referred to as net income if it is positive or net loss if it is negative.

[10] Note that the assets reflected in this relationship only include "admitted" assets because Statutory Accounting Principles (SAP) do not allow insurers to take credit for nonadmitted assets in surplus. Admitted versus nonadmitted assets are discussed later in this text.

The nature of the service provided by insurance companies, which is a promise to pay claims in the future if some specific criteria are met, creates unique accounting challenges. Insurance accounting standards address how to earn the premiums insurance companies are paid and how to measure and when to record claim costs resulting from the insurance coverage. Again, actuaries usually play a significant role in the estimation of the amount and timing of these future payments and therefore are critical to the accurate preparation of the income statement. Another important source of revenue for insurance companies is investment income, which will be discussed in Chapter 8. *The Statutory Income Statement: Income and Changes to Surplus*.

CAPITAL AND SURPLUS

The statement of capital and surplus reflects certain changes in surplus that are not recorded in the income statement and reconciles the beginning surplus to the ending surplus for the reporting period. This statement is similar for insurance companies and for other types of companies; however, there are several items within the statement of capital and surplus, such as those related to nonadmitted assets and the provision for reinsurance, that are unique to insurers. These items and others will be discussed in Chapter 7. *Statutory Balance Sheet: A Measure of Solvency* and Chapter 8. *The Statutory Income Statement: Income and Changes to Surplus*.

CASH FLOW

The cash flow statement receives less attention but is also important. This financial statement is necessary because the timing of the receipt or payment of cash for a revenue or expense does not necessarily coincide with the recognition of that revenue or expense from an income statement perspective. In other words, even if the cash payment is received sometime before or sometime after the good or service is provided, the associated revenue is generally recognized at the time the good or service is provided. The cash flow statement presents all operations strictly from a cash perspective.

In other industries, companies face liquidity issues when they cannot collect revenue in cash on a timely basis, and this type of liquidity issue would be made evident by the statement of cash flows. An example of this would be a manufacturing company that sold products on credit but was not able to collect the cash on a timely basis to pay their expenses. For insurance companies, this specific type of liquidity issue is less likely to occur due to the collection of premiums at the onset of the policy and the subsequent payment of losses. This difference in the order of cash receipts and disbursements somewhat diminishes the importance of cash flow statements for insurance companies. Further, actuaries are not generally involved in or necessary for the preparation of the cash flow statement, so this financial statement is not covered in detail in this publication.

NOTES TO FINANCIAL STATEMENTS

In addition to the four primary financial statements already discussed, another important element is the notes to financial statements. The notes include quantitative and qualitative disclosures regarding the significant accounts presented in the financial statements. This includes matters that are relevant or

may be relevant to the users of the financial statements. For instance, the notes will typically describe the basis of accounting used in the preparation of the financial statements, as well as any important details on specific aspects of the financial statements that are based on estimates or subject to uncertainty. We will discuss several of the footnotes to the financial statements that are of specific importance to actuaries in Chapter 10. *Notes to Financial Statements*.

## CHAPTER 5. KEY ACCOUNTING CONCEPTS

Throughout each major accounting framework, there are several common key concepts. Understanding these key concepts will be beneficial to anyone who is involved in using or preparing financial statements because it will allow them to appreciate the purposes of and the differences between each framework. A few of the most important and relevant concepts are below.

- Liquidation vs. going concern: When preparing financial statements, it is possible to view the company as either an ongoing business (going concern) or as a run-off of the current assets and liabilities (liquidation). Either perspective may be appropriate depending on the user and purpose of the financial statements. For instance, investors would generally be most interested in the value of a business as a going concern, whereas regulators may think in terms of a liquidation perspective, given that they are primarily interested in the ability of the company to satisfy its policyholder obligations.

- Fair value vs. historical cost: There are often multiple possible approaches to valuing a given asset or liability. The choice of approach is of particular importance when the value of that asset or liability is uncertain. Recording an asset or liability at fair value means recording it at a value that it would be bought or sold for in the open market, while recording at historical cost means valuing it at the original purchase price less depreciation. In cases where the value of an asset or liability is uncertain, there is a trade-off between the reliability of the historical cost method (in that it is objectively verifiable) and accuracy of the fair value approach (in that it is more consistent with the actual market value).

- Principle-based vs. rule-based: Each aspect of any accounting framework is generally guided by either a principle or a rule. A principle describes a general accounting approach that must be interpreted and applied, while a rule provides specific accounting guidance on how something should be done. There is a trade-off because the rules-based guidance may be easier to understand and to audit, but a principles-based approach is generally more adaptable to changes in the business environment.

# PART III. SAP IN THE U.S.: FUNDAMENTAL ASPECTS OF THE ANNUAL STATEMENT

## INTRODUCTION TO PART III

In the U.S., property/casualty insurance companies report their financial results to state insurance regulators in what is called the Annual Statement. For those who have never used or seen an Annual Statement, it is an 8.5" x 14" book. The Property/Casualty Annual Statement is identified by its yellow cover, while the Life Annual Statement's cover is blue (known as the yellow book and blue book, respectively). Both types of Annual Statements are publicly available documents.

The Annual Statement is developed and maintained by the National Association of Insurance Commissioners and is often referred to as "the Blank." The Blank is the template that insurance companies use to report under Statutory Accounting Principles (SAP), and is uniformly adopted by all states. This allows insurance companies licensed in multiple states to prepare one Annual Statement for filing with all states. The Annual Statement is accompanied by NAIC instructions that are generally adopted by all states, though there are instances of specific differences and exceptions.

The first page in the Annual Statement is the Jurat page, which provides basic information about the reporting entity, such as name, NAIC code, address, name of preparer and title, and officers of the reporting entity. The notarized signatures of officers of the reporting entity are included on this page, attesting to the accuracy of the information contained therein.

Following the Jurat page are the statutory financial statements. The statutory Annual Statement contains other exhibits and schedules that provide further insight into the insurance company's statutory financial statements and historical experience. These include General Interrogatories; Five-Year Historical Data; and Schedules A, B, BA, D, DA, F, P, T and Y.

In Part III. *SAP in the U.S.: Fundamental Aspects of the Annual Statement*, we will walk through the Property/Casualty Annual Statement, beginning with the financial statements, and discuss the related accounting requirements. We provide examples to illustrate the uses of the Annual Statement and how certain amounts are calculated and compiled.

## CHAPTER 6. INTRODUCTION TO STATUTORY FINANCIAL STATEMENTS

### INTRODUCTION

This chapter focuses on Statutory Accounting Principles (SAP) and specifically discusses the fundamental aspects of the Annual Statement, including the financial statements themselves (the balance sheet and income statement, for example), as well as the other exhibits and filings that accompany the Annual Statement (such as various schedules, the Insurance Expense Exhibit and the Risk-Based Capital calculation). Part V. *Financial Health of Property/Casualty Insurance Companies in the U.S.* will discuss how this information can be used to assess the financial health of an insurance company and Part VI. *Differences from Statutory to other Financial/Regulatory Reporting Frameworks in the U.S.* will focus on differences between SAP and the other financial and relevant regulatory reporting regimes.

### SAP AND THE NAIC

The National Association of Insurance Commissioners (NAIC) operates through various committees that comprise state insurance commissioners and their staff. Through these committees, the NAIC regularly updates SAP and creates model insurance laws and regulations that individual states may elect (or be required) to adopt. While this generally leads to a good deal of uniformity in insurance regulation, there are still instances of differences between states. For example, individual states have the ability to permit accounting practices that differ from NAIC SAP ("permitted practices") and model laws and regulations are not always enacted by all states exactly as adopted by the NAIC.

It is worth noting that the NAIC may revise the Annual Statement each year, and these changes are described on the NAIC website. The basis of the examples and exhibits provided in this section of the publication are based in part on the structure and information provided in the 2011 industry Annual Statement, with specified updates based on the 2018 Annual Statement as noted in Foreword of this publication.[11]

[11] Accessed via a sector-specific information and research firm in the financial information marketplace.

## CHAPTER 7. STATUTORY BALANCE SHEET: A MEASURE OF SOLVENCY

As previously noted, the primary focus of statutory accounting is to highlight potential solvency issues (an insurance company's capability to meet its obligations to its policyholders and creditors when due). Consequently, the most important aspect of an insurance company's financial statements to an insurance regulator is the strength of its balance sheet (i.e., the extent to which its admitted assets are sufficient to meet all liabilities).

RELEVANCE TO ACTUARIES

Solvency and the balance sheet are relevant to the actuary for two primary reasons.

First, actuaries traditionally have some responsibility for the loss and loss adjustment expense (LAE) reserves, which represent the majority of the liabilities for property/casualty insurance companies. Actuaries may either participate directly in the reserve-setting process, or they may assess the reasonableness of the reserves established by company management. Actuaries involved in either of these functions are focused on the liabilities for losses and LAE on the Liabilities, Surplus and Other Funds page of the Annual Statement (page 3).

Second, actuaries often have a role in determining or assessing the amount of capital that an insurance company requires to support the risks that it has taken through its business operations. In the context of statutory accounting, this would be based on an actuary's understanding of the Risk-Based Capital (RBC) framework to calculate the required capital at a given point in time (see Chapter 19. *Risk-Based Capital*). More broadly speaking, actuaries may evaluate the surplus needs on other bases, including on an economic basis, which is guided by the insurer meeting some economically defined criteria for solvency. In both of these cases, an actuary who is evaluating an insurance company's capital will need to be familiar with the admitted assets and the liabilities on the balance sheet (pages 2 and 3), as well as the risk characteristics of each of those items.

This chapter will provide an overview of the composition of the two main categories in the statutory balance sheet:

- Assets (page 2)
- Liabilities, Surplus and Other Funds (page 3)

ASSETS[12]

Assets can be broadly defined as a property, right or claim arising from past events that has future value. From an individual perspective, we are all accustomed to the concept of owning financial assets, such as

[12] In general, this section aligns with Chapter 2 (Assets) of Property Casualty Insurance Accounting by the Insurance Accounting and Systems Association (IASA). References to other sections in IASA that were previously on the CAS Syllabus will be included throughout. Readers seeking additional detail may consult with IASA on these topics or other topics.

stocks and bonds, and owning real assets, such as a home or vehicle. Insurance companies own various assets in the same way that an individual does, and those assets are summarized on page 2 of the Annual Statement Blank (the balance sheet). Some of these assets are consistent with assets of non-insurance entities, and some are specific to insurance companies.

Table 2 summarizes the major assets held by the U.S. property/casualty insurance industry as of December 31, 2018.[13] The first column indicates the numerical label for each item, as presented on page 2 of the Annual Statement. Only the material line items are shown in this summary.

[13] Accessed via a sector-specific information and research firm in the financial information marketplace.

TABLE 2

**Assets: Total U.S. P&C Insurance Industry**
**U.S. 2018 Statutory Financials, NAIC Format (USD in OOOs)**

| Line | Description | Assets | % of Total | Nonadmitted Assets | Net Admitted Assets | % of Total |
|---|---|---|---|---|---|---|
| 1. | Bonds | 1,027,815,046 | 49% | 312,840 | 1,027,502,206 | 51% |
| 2.1 | Preferred stocks | 5,454,309 | 0% | 7,203 | 5,447,106 | 0% |
| 2.2 | Common stocks | 395,451,664 | 19% | 5,734,811 | 389,716,853 | 19% |
| 4. | Real estate | 13,727,077 | 1% | 43,525 | 13,683,552 | 1% |
| 5. | Cash, cash equivalents and short-term investment | 101,993,264 | 5% | 29,624 | 101,963,640 | 5% |
| 8. | Other invested assets | 149,642,333 | 7% | 14,765,778 | 134,876,555 | 7% |
| **12.** | **Subtotal, cash and invested assets** | **1,725,865,280** | **83%** | **22,972,981** | **1,702,892,299** | **84%** |
| 15.1 | Uncollected premiums and agents balances | 66,184,809 | 3% | 3,309,043 | 62,875,766 | 3% |
| 15.2 | Deferred premiums and agents balances | 121,849,858 | 6% | 316,170 | 121,533,688 | 6% |
| 16.1 | Amounts recoverable from reinsurers | 42,558,949 | 2% | 4,258 | 42,554,691 | 2% |
| 18.2 | Net deferred tax asset | 25,779,026 | 1% | 6,952,286 | 18,826,740 | 1% |
| 23. | Receivables from parent, subsidiaries and affiliates | 22,055,541 | 1% | 427,692 | 21,627,850 | 1% |
| 25. | Aggregate write-ins | 33,353,894 | 2% | 10,307,386 | 23,046,508 | 1% |
| | Other non-invested assets | 41,352,758 | 2% | 9.766,723 | 31,586,035 | 2% |
| | **Subtotal, non-invested assets** | **353,134,835** | **17%** | **31,083,558** | **322,051,277** | **16%** |
| **28.** | **Total** | **2,079,000,115** | **100%** | **54,056,540** | **2,024,943,576** | **100%** |

As shown in Table 2, the U.S. property/casualty industry held $2.1 trillion dollars of assets as of December 31, 2018. The statutory balance sheet makes two broad distinctions regarding assets held by insurers:

- Cash and invested assets vs. non-invested assets: Assets are categorized by this criterion to identify the proportion of an insurer's asset that is readily convertible to cash. The "cash and invested assets" are assets that could be readily sold in near term to meet the insurer's liabilities, while the "non-invested assets" are less liquid. This distinction is in line with the emphasis that statutory accounting places on solvency. Rows 1 through 12 on the Assets page include cash and invested assets, while rows 13 through 25 include non-invested assets.

- Admitted vs. nonadmitted assets: As shown in Table 2, there are separate columns that depict the amount of assets that are nonadmitted. These nonadmitted assets, which represent about 3% of total assets, are not recognized by state insurance departments in evaluating the solvency of an insurance company for statutory accounting purposes. The rationale for this exclusion is that those nonadmitted assets are not readily convertible for use to meet an insurer's liabilities

now *or in the future* and thus would not be reasonable to consider in evaluating a company's solvency. In many cases nonadmitted assets are determined by formulae established by the National Association of Insurance Commissioners (NAIC). As shown in Table 2, there are nonadmitted assets in the cash and invested assets categories and the non-invested assets categories, though the proportion of nonadmitted assets is much lower for cash and invested assets. Several common examples of nonadmitted assets will be discussed in the description of the specific asset classes below (such as certain uncollected and deferred premiums and agents' balances and net deferred tax assets), which will help to demonstrate this point.

Those distinctions aside, it is clear from Table 2 that the largest asset class for the property/casualty industry in 2018 was bonds, which represented 49% of the industry's total assets, followed by common stocks, which represented 19% of the industry's total assets. These statistics have remained relatively consistent over the years. While most actuaries will not need to have a deep understanding of each of the asset classes on the balance sheet, is it worthwhile to know a few relevant details on the largest classes to have a fundamental understanding of the balance sheet.

*Bonds (Line 1)*

Bonds are securities that pay one or more future interest payments according to a fixed schedule. The face value of a bond refers to the amount that is to be paid in the final single payment at the maturity of a bond. When an insurance company purchases a bond, the current value of that bond is recorded as the actual cost, including brokerage and other fees. This purchase price may be more or less than the face value of the bond.

To the extent that the purchase price is higher (or lower) than the face value of the bond, a bond premium (or discount) is recorded as a part of the recorded amount. Over the life of the bond, that bond premium or bond discount will be amortized according to a constant yield approach. The reason for this amortization is that when the bond ultimately matures, the amortized value will be equal to the face value, eliminating a lump sum gain or loss at the maturity of the bond.

After the purchase, statutory accounting indicates that bonds be recorded at one of the following bases:

- Amortized cost
- The lower of amortized cost or fair value

The designation that the NAIC's Security Valuation Office (SVO) assigns to the bond determines the applicability of the two bases above. The six possible designations are NAIC 1 through NAIC 6, which range from the "highest quality" bonds to "bonds in or near default," respectively. Bonds with the two highest designations (NAIC 1 and 2) are carried at amortized cost, while bonds with designations of NAIC 3 ("medium quality") and below are carried at the lower of amortized cost or fair value. The amount at which a bond is recorded, following these criteria, is referred to as the adjusted carrying value.

Schedule D of the Annual Statement provides details on the specific bonds that are held by an insurance company, including the following:

- Type of issuer (e.g., federal, state or corporate)
- Maturity (e.g., one year, one year to five years)
- NAIC Class (Class 1 through Class 6)

Based on the industry aggregate Annual Statement as of December 31, 2018, insurance companies' bond portfolios were made up of approximately 44% industrial bonds, 24% special revenue bonds, and 17% U.S. government bonds. By maturity, just over half of bonds held were 5 years to maturity or less, with the majority of the remainder having maturities between 5 and 10 years. Furthermore, approximately 80% of bonds held by insurers were in the NAIC Class 1.

Given that bonds are the largest asset class for property/casualty insurers, an actuary or other user of the financial statements who is reviewing the financial health of an insurance company may benefit from reviewing the detail in Schedule D.

*Stocks (Lines 2.1 and 2.2)*

As shown in Table 2, approximately 19% of insurers' assets were in common or preferred stock. Stocks are securities that represent an ownership share in a company. Those ownership shares are subordinate to bondholders and creditors. Common stock ownership confers voting privileges and may pay a dividend, though the dividend is not guaranteed. Preferred stock does not confer voting privileges but usually provides a guarantee on dividends to be paid, and usually has preference to common stock in the event of liquidation.

At purchase, stocks are valued at cost plus any brokerage or related fees. After purchase, publicly traded stocks are recorded at fair value, which is based on the market price that is readily available to the public and which can generally be determined from external pricing services. If a stock is not publicly traded or a price is not available, the NAIC's SVO will determine a fair value. Preferred stocks are assigned similar NAIC designations as bonds with six rating levels, which dictate whether they are valued at cost, amortized cost or fair value based on the NAIC designation.

An actuary or other user of the financial statements who is evaluating the financial health of an insurance company should take note of a property and investigate further if an insurance company has a relatively larger portion of their assets in stocks, compared to the overall industry.

*Real Estate (Line 4)*

Three classes of real estate are presented separately on the Assets page of the Annual Statement:

- Properties occupied by the company
- Properties held for the production of income
- Properties held for sale

These classes are relatively self-explanatory, though one detail to be aware of is that if a company and its affiliates occupy less than 50% of a property, it is classified as either a property held for production of income or a property held for sale (as opposed to a property occupied by the company). Properties in the first two categories are generally recorded at depreciated cost, while properties that are held for sale are recorded at the lower of depreciated cost (i.e., carrying amount) or fair value less encumbrances and estimated costs to sell the property.

Details of a company's real estate transactions and holdings are presented in Schedule A of the Annual Statement.

*Cash, Cash Equivalents and Short-Term Investments (Line 5)*

This asset class generally includes assets that are immediately convertible to cash. As of December 31, 2018, these assets represented nearly 5% of insurers' total assets, and approximately two-thirds of these assets were in short-term investments.

Cash equivalents must have an original maturity of less than three months, and short-term investments must have an original maturity of one year or less. In the Annual Statement, details on cash are provided in Schedule E-1, cash equivalents are described in Schedule E-2, and short-term investments are found in Schedule DA. Further, a reconciliation is made in the Cash Flow statement showing cash, cash equivalents and short-term investments at the beginning of the year, adjusted for net cash (inflows minus outflows from operations, investments, financing and miscellaneous sources) during the year. The result is the amount of cash, cash equivalents and short-term investments at the end of the year, which is shown in line 5 of the Assets page.

*Uncollected and Deferred Premiums and Agents' Balances (Lines 15.1 and 15.2)*

These two asset classes represent premiums that have been written but have not yet been received. Although the names of the asset classes refer to "agents' balances" (or balances due from policies sold by insurance agents, as intermediaries between the insurance company and the policyholder), both asset classes may also include uncollected premiums for policies sold directly to policyholders.

Uncollected premiums and agents' balances include premiums due on or before the financial statement date, while deferred premiums and agents' balances include premiums due after the financial statement date. Both classes include installment premiums that meet those timing criteria as well.

Premiums that are more than 90 days past due from an agent or a direct policyholder are considered nonadmitted assets. Furthermore, an insurer may determine that agents' balances that are 90 days or more overdue are unlikely to be collected (or "impaired"). In this event, the insurer should write-off the uncollectable balance.

These two classes together represented nearly 10% of the industry assets as of December 31, 2018, highlighting that collectability of these assets is relevant to a company's financial health and a measure

of the efficiency of its collections' department. An actuary or other user of the financial statements who is reviewing the financial health of an insurer may consider the overall magnitude of a company's uncollected and deferred agents' balances and the percentage of agents' balances that are nonadmitted. Either one of these metrics could be benchmarked to the overall industry; a company having a significantly higher portion of its assets in these two classes relative to the industry would warrant further analysis to understand the impact to liquidity.

*Amounts Recoverable from Reinsurers (Line 16.1)*

This asset class reflects amounts that are expected to be recovered from a reinsurer on losses and LAE that have been paid by the company, but do not include expected reinsurance recoveries for loss and LAE reserves. The reason that expected recoveries for loss and LAE reserves are not included is that loss and LAE are already reflected net of reinsurance on the balance sheet. Additional detail on expected recoveries for both paid amounts and reserves are included in Schedule F, which will be discussed in detail in Chapter 14. *Schedule F*. The detail included in Schedule F allows an actuary or other user of the financial statements to assess the quality and collectability of the reinsurance recoverables.

*Net Deferred Tax Assets (Line 18.2)*

Deferred tax assets (DTAs) represent expected future tax benefits related to amounts previously recorded in the statutory financial statements and not expected to be reflected in the tax return as of the reporting date. They are referred to as "net" DTAs because they are recorded net of any deferred tax liabilities (DTLs) that exist. Two common sources of DTAs relevant to the actuary are the following:

- The difference in tax accounting and statutory accounting for loss reserves
- The carryforward of net operating losses from previous years

The first source of DTAs is particularly relevant to actuaries. For tax reporting purposes, loss reserves are discounted when determining taxable income. This means that an insurance company is not able to deduct from taxable income the full amount of losses that are incurred during a year. Therefore, assuming loss reserves are growing, a company's income on a tax basis is higher than the company's pre-tax income on a statutory basis in the current year. In the future, as this discounting unwinds, the insurer will get a tax deduction, which will not be recorded in statutory financial statements because it was already recorded in the year the reserves were established. The value of this future deduction (21% of the deduction) represents the DTAs. This asset can be particularly significant for growing companies.

The second source of DTAs of relevance to the actuary (carryforward of net operating losses) occurs when an insurance company has net operating losses in one financial year and expects those losses to offset taxable income in the future, thereby reducing future tax liability.

For any DTA, an insurer can only record the portion of the asset that is expected to be realized, based on available evidence. Furthermore, the insurer must perform an admissibility test to determine the amount of a DTA that can be considered as an admitted asset.

As shown in Table 2, DTAs were one of the largest components of nonadmitted assets reported at December 31, 2018, representing $7 billion of the total $54.1 billion in nonadmitted assets, or 13%.

*Receivables from Parent, Subsidiary and Affiliates (Line 23)*

Many insurance companies are members of a national or international insurance group or may be affiliated with other insurance companies that are owned by the same ultimate parent company. These affiliates often share services or resources, such as internal support staff or third-party vendor agreements. In these cases, receivable balances for these services or resources exist between the parties.

As shown in Table 2, these receivables accounted for about 1% of assets held by the industry at December 31, 2018. If an individual company had a significantly larger portion of their assets in the form of receivables, a user of those financial statements may consider investigating further, as those receivables may not be as liquid or available as other asset types. More specifically, the user could attempt to ascertain the specific source of the receivables and the proportion of the receivables that are paid on time.

*Other Nonadmitted Assets*

In addition to the examples of nonadmitted assets already mentioned (agents' balances more than 90 days overdue and net DTAs that are do not meet the statutory admissibility test), there are other sources of nonadmitted assets. Several common examples include:

- Amounts held of specific types of bonds, stocks, mortgage loans or real estate that are in excess of limitations that exist in specific states
- Electronic data processing equipment and operating system software in excess of specified limits (i.e., percentage of adjusted capital and surplus)
- Nonoperating system software
- Furniture, fixtures, equipment and leasehold improvements
- Balances due from a broker when a security has been sold but the proceeds have not been received that are still outstanding more than 15 days after settlement
- Funds held or deposited with reinsured companies that exceed the associated liabilities or are held by an insolvent reinsured company
- 10% of deductibles recoverable on high deductible insurance policies in excess of collateral specifically held and identifiable on a per policy basis

As previously noted, nonadmitted assets only represented about 3% of the total industry assets at December 31, 2018. However, due to their importance when measuring solvency, an actuary should be familiar with the sources of nonadmitted assets. If an actuary or other user of the financial statements observes that an insurer has a larger proportion of nonadmitted assets than the industry average, it may be worthwhile to investigate further to understand the source of those nonadmitted assets because they could be indicative of a problem with the business.

## LIABILITIES AND SURPLUS[14]

A liability is an obligation that the company must fulfill, based on past events or transactions, which will require the use of the company's resources. Under the literal definition of solvency, a company must have assets that are at least equal to its liabilities to remain solvent.

To be prudent and to comply with RBC requirements (see Chapter 19. *Risk-Based Capital*), most insurance companies have admitted assets that significantly exceed their liabilities. The amount of this excess of admitted assets over liabilities is generally referred to as surplus. Surplus can be viewed as the equity in the business or as the source of protection to the policyholders. These three amounts follow the relationship shown below:

Admitted Assets = Liabilities + Surplus

Or, equivalently,

Admitted Assets – Liabilities = Surplus

Because the combination of liabilities and surplus are equal to assets, liabilities and surplus are presented on the same page (page 3) of the Annual Statement. The assets reflected in the relationship above include only admitted assets because Statutory Accounting Principles (SAP) do not allow insurers to take credit for nonadmitted assets in surplus.

A breakdown of the industry liabilities and surplus amounts (page 3 of the Annual Statement) by significant account is provided in Table 3 as of December 31, 2018.[15]

TABLE 3

**Liabilities, Surplus and Other Funds: Total U.S. Property/Casualty Insurance Industry**
**U.S. 2018 Statutory Financials, NAIC Format (USD in 000s)**

| Line | Description | Liabilities | % of Total |
|---|---|---|---|
| 1. | Losses | 547,217,016 | 27% |
| 2. | Reinsurance payable on paid loss and loss adjustment expenses | 29,393,074 | 1% |
| 3. | Loss adjustment expenses | 114,072,279 | 6% |
| 5. | Other expenses (excluding taxes, licenses and fees) | 8,191,309 | 0% |
| 9. | Unearned premiums | 275,398,145 | 14% |
| 12. | Ceded reinsurance premiums payable | 59,593,117 | 3% |
| 13. | Funds held under reinsurance treaties | 31,513,557 | 2% |
| 16. | Provision for reinsurance | 2,745,410 | 0% |
| 25. | Aggregate write-in for liabilities | 77,254,001 | 4% |
| | Other liabilities | 122,643,849 | 6% |
| **28.** | **Subtotal, liabilities** | **1,268,021,758** | **65%** |

[14] Aligns with IASA Chapter 5.

[15] Accessed via a sector-specific information and research firm in the financial information marketplace.

| | | | |
|---|---|---|---|
| 29. | Aggregate write-ins for special surplus funds | 83,179,182 | 4% |
| 30. | Common capital stock | 3,982,853 | 0% |
| 34. | Gross paid in and contributed surplus | 197,134,014 | 10% |
| 35. | Unassigned funds | 459,882,311 | 23% |
| | Other surplus and capital | 12,743,455 | 1% |
| **37.** | **Subtotal, surplus as regards policyholders** | **756,921,815** | **37%** |
| **38.** | **Total** | **2,024,943,573** | **100%** |

First, note that the total amount of liabilities and surplus shown in Table 3 ($2.025 trillion) is exactly equal to the amount of net admitted assets that were shown in Table 2. This relationship must be true given the fundamental equation of Admitted Assets = Liabilities + Surplus.

The next observation that can be made is that the insurance industry's admitted assets equal 1.6 times its liabilities as of December 31, 2018. On the surface, this suggests that the industry as a whole had sufficient assets to be able to sustain a sizeable increase in liabilities (or reduction in asset values) while still maintaining solvency, due to the current positive difference of assets relative to liabilities.

However, this may not be true at the individual company level, and there are also other risks that could affect surplus that are not reflected in either the recorded assets, admitted assets or liabilities (such as catastrophe risk or liquidity risk). An actuary can benchmark a company's ratio of liabilities to surplus against the current industry average. Further investigation may be warranted if the ratio is significantly higher than that of the industry. A review of the company's RBC would be the next logical step.

We can also measure each of the underlying accounts in relation to total liabilities or surplus. Together, loss and LAE reserves (lines 1 and 3) have historically been the largest liability item on a property/casualty insurance company's balance sheet. As of December 31, 2018, this item represented over 50% of total industry liabilities. This speaks to the importance of property/casualty actuaries to the financial reporting process because they are often the most suited to evaluate and establish those liabilities. The next largest liability class is unearned premium reserves, which made up approximately 22% of the industry liabilities as of December 31, 2018. Given actuaries' involvement in pricing products, actuaries certainly play a role in this premium account. To the extent the unearned premium is not adequate to cover expected future losses, LAE and maintenance expenses, additional liabilities need to be recorded. Actuaries often play a key role in that analysis.

A brief description of each of the key liabilities and surplus classes is provided below.

*Loss and Loss Adjustment Expense Reserves (Lines 1 and 3)*

The required basis for loss and LAE reserves under SAP is defined by Statement of Statutory Accounting Principles (SSAP) 55, *Unpaid Claims, Losses, and Loss Adjustment Expenses*. SSAP 55 states that the recorded liabilities for loss and LAE reserves, for each line of business and for all lines of business in the aggregate, should be based on "management's best estimate" (note that this term is not explicitly defined in the accounting guidance). Further, SSAP 55 requires that management consider the variability

in the estimate of these liabilities. The standard states that management's best estimate may consider a range of estimates; in the rare instances when no point within the range is considered to be a better estimate than other points within the range, the midpoint of the range should be used.

Note that SSAP 55 refers to management's best estimate and not the actuary's best estimate or central estimate. However, management will often rely on an actuary's estimate, in whole or in part, in establishing their own best estimate to be recorded on the balance sheet. Whether or not management relies on an actuary in establishing the recorded reserves, the NAIC Model Law for Property and Casualty Actuarial Opinions (MDL-745)[16] requires that a Statement of Actuarial Opinion be provided that attests to the adequacy of the recorded liabilities (see *Chapter 16. Statement of Actuarial Opinion*).

Significant detail on the loss and LAE reserves is included in Schedule P of the Annual Statement. Schedule P provides loss and LAE reserves both gross and net, and also breaks down the total reserves by line of business and accident year. Further detail on the data in Schedule P and the potential uses of that data are described in Chapter 15. *Schedule P*. There are also relevant references to loss and LAE reserves in the Notes to Financial Statements within the Annual Statement (see Chapter 10. *Notes to Financial Statements*).

Because loss and LAE reserves are often the largest most variable liability on an insurer's balance sheet, they are of critical importance to the financial health of an insurance company.

*Reinsurance Payable on Losses and Loss Adjustment Expenses (Line 2)*

Reinsurance payable on losses and LAE includes liabilities related to assumed reinsurance contracts and is for loss and LAE that have already been paid by the reinsured. A detailed breakdown of this amount by type of reinsurer (e.g., affiliated, authorized and unauthorized as well as U.S. and non-U.S.) is provided in Schedule F, Part 1, column 6. Liabilities under assumed reinsurance contracts for loss and LAE that are reserved by the reinsured, but not paid, are included in lines 1 and 3 of the Liabilities, Surplus and Other Funds page (loss and LAE reserves).

*Other Expenses (Excluding Taxes, Licenses and Fees) (Line5)*

In general, an insurance company's expenses can be separated into two broad categories: LAE and underwriting and investment expenses. Further divisions can be made within each category. The underwriting and investment expense category can be further divided into the following subcategories:

- Commission and brokerage expenses
- Taxes, licenses and fees
- General and administrative expenses
- Investment expenses

[16] NAIC, NAIC, *Model Laws, Regulations, Guidelines and Other Resources,* – MDL-745, October 2003, https://www.naic.org/store/free/MDL-745.pdf, 2019.

The other expenses liability item on the balance sheet generally represents incurred but not yet paid expenses from the third and fourth categories listed above. Additional detail on these expenses can be found in the Underwriting and Investment Exhibit (U&IE), Part 3, Expenses, where the unpaid expenses are shown on line 26. Although this exhibit does not provide the breakdown of the unpaid expenses by expense category, the total incurred expenses during the calendar year for these other expenses are included on lines 3 through 18.

An additional observation from U&IE, Part 3 is that each category of other underwriting expenses is split between column 1 (Loss Adjustment Expenses), column 2 (Other Underwriting Expenses) and column 3 (Investment Expenses). This is based on an allocation that is performed by the company, and that allocation determines whether unpaid amounts in these categories appear on the balance sheet as LAE reserves or as other expenses liabilities. Additional discussion regarding other expenses is provided in Chapter 8. *The Statutory Income Statement: Income and Changes to Surplus*. Further detail regarding the allocation of expenses by category is also provided in the following chapter (Chapter 18. *Insurance Expense Exhibit*).

*Unearned Premiums (Line 9)*

Unearned premium represents a liability related to the unexpired portion of all policies in force. For any individual in-force policy, the total amount of written premium can be separated into earned and unearned portions. In the simplest and most common case, this split is made by the number of coverage days in the total policy period that are expired or unexpired, respectively. This approach is referred to as the daily pro rata method and is the standard method used for lines such as automobile insurance, homeowners, general liability or property.

Another approach that is sometimes used is called the monthly pro rata method. This method assumes that policies are written evenly over the course of the month. Based on that assumption, 1/24 of the premium written in a given month is expected to earn in that month. Subsequent to that, 1/12 is expected to be earned in the next 11 months, and the remaining 1/24 is earned in the thirteenth month. This abbreviated method allows for a calculation of the earned premium in each month with less data and calculations.

Some specific types of coverage require different approaches to calculating earned premium (e.g., title insurance, financial guaranty and ocean marine).

The unearned premium reserve serves the important purpose of recognizing revenue over the time period the policy is in force. Unearned premium reserves represent an insurer's obligation to provide future coverage and the potential obligation to refund the unexpired portion of the premium to a policyholder, in the event that a policy is cancelled.

While this accrual of unearned premium and the subsequent earning of that premium may appear to be an attempt to match revenues with expenses, this is not the case. Statutory accounting requires that expenses related to the acquisition of an insurance policy be realized as an expense at the time of

acquisition. Despite that, the full amount of the written premium is still recorded as an unearned premium reserve at the inception of the policy. This departure from the matching principle that is commonly followed in accounting regimes exists to allow for a more conservative solvency-focused presentation because it results in lower policyholders' surplus, which is consistent with the objective of SAP.

Additional detail of the composition of the unearned premium recorded on page 3 (Liabilities, Surplus and Other Funds) of the Annual Statement can be found on page 7, which is part of the U&IE. Page 7 (U&IE Part 1) shows the breakdown of the total unearned premium into the following four categories:

- Amount unearned (running one year or less from date of policy)
- Amount unearned (running more than one year from date of policy)
- Earned but unbilled premiums
- Reserve for rate credits and retrospective adjustments based on experience

The first two categories above are relatively self-explanatory and separate the unearned premium related to policies with effective periods that are one year or less and policies with effective periods that are longer than one year. The third category, earned but unbilled (EBUB) premiums, includes estimated adjustments that will occur to the premium on audit-type policies where the actual amount of premium depends on some exposure measure, such as payroll, and is unknown until the end of the policy period. EBUB premiums are only recorded if they are reasonably estimable in the aggregate. The fourth category represents the expected adjustments that will occur on retrospectively rated policies, where the premium is variable based on the loss experience on the policy.

In addition, SAP and GAAP require an insurer to establish a separate premium liability, referred to as a premium deficiency reserve, if the unearned premium reserve for a portion of the business is not sufficient to cover the expected corresponding losses, expenses and other costs. An actuary in either a reserving or pricing role should be aware of the criteria that dictate when a premium deficiency reserve is required so they can advise management accordingly. Different criteria apply for short-duration and long-duration contracts. Additional discussion of premium deficiency reserves is included in Chapter 10. *Notes to Financial Statements* and Chapter 22. *U.S. GAAP, including Additional SEC Reporting*.

*Ceded Reinsurance Premiums Payable (Line 12)*

Ceded reinsurance premiums payable represent premiums that are owed to reinsurers for ceded reinsurance. This liability is recorded net of any commission retained to cover expenses that were incurred in issuing the reinsured policies. This line item does not include ceded reinsurance that are owed to the reinsurer or other funds that are being held as a deposit by the ceding company as collateral for payment of the reinsurer's obligations under specific terms of the reinsurance treaty, which is reflected in the next item, "Funds Held Under Reinsurance Treaties," discussed below.

*Funds Held Under Reinsurance Treaties (Line 13)*

These liabilities relate to funds that are held by a ceding company as collateral from a reinsurer. The funds provide security to the ceding company that the reinsurer will pay losses as they come due. This is particularly common in the case of unauthorized reinsurers (companies not authorized or licensed to do business in the ceding company's state of domicile) because it allows the ceding company to avoid a statutory accounting penalty on the recoverables from the unauthorized reinsurer. This penalty is described in SSAP 62R, which states that a recoverable from an unauthorized reinsurer that is not sufficiently collateralized is a nonadmitted asset. As noted above, this category also included ceded reinsurance premiums that were payable but were held according the terms of the reinsurance agreement.

*Provision for Reinsurance (Line 16)*

Although the magnitude of this liability category is not large for most insurers, it is worth mentioning because it is unique to statutory accounting. The provision for reinsurance is a statutory liability established for reinsurance recoverables that may not be collectable. The change in this provision is recorded directly to surplus. This penalty applies to all reinsurers that are slow to pay or that are disputing amounts owed to the ceding company and unauthorized reinsurers that do not meet the collateral requirements of the ceding company's domiciliary state. The actual details of the calculation of the provision for reinsurance are shown in Schedule F, Part 3 (Chapter 14. *Schedule F*) provides the details underlying this calculation).

Note that the net loss reserves, net unearned premium and the amounts recoverable from reinsurers for paid losses on page 2 of the Annual Statement are net of reinsurance but are stated without regard for the provision for reinsurance. The provision for reinsurance appears on page 3 and is a direct reduction to surplus and does not affect a company's admitted assets or income. This direct reduction to surplus and other direct reductions to surplus will be discussed in Chapter 8. *The Statutory Income Statement: Income and Changes to Surplus*.

*Common Capital Stock (Line 30)*

Common capital stock is a surplus account that is equal to the par value of the common stock issued and outstanding. This account only applies to stock insurance companies and does not exist for mutual insurance companies. Par value is an amount set by the issuer of a stock (the insurer, in this case) when the stock is initially offered that serves as a minimum value for which the stock can be sold in that initial offering. Par value has no relation to the market value of a stock and is often set at a low amount, so this common capital stock is not a material item for most insurers (it is only included here to allow for a complete explanation). Certain state regulators have specific requirements for how the par value of shares is established. A separate, similar account is maintained for preferred stock.

*Gross Paid in and Contributed Surplus (Line 34)*

This account represents amounts received through the sale of stock in excess of the par value for each share. This account also exists only for stock insurers. As shown Table 3, gross paid in and contributed surplus makes up 26% of the industry surplus, and it is much larger than the common capital stock account.

*Unassigned Funds (Line 35)*

Unassigned funds primarily represents surplus that has been accumulated over time through retained earnings of the business. For mutual companies, all surplus will generally be reflected in the unassigned funds account because none of those funds were received due to the sale of stock. However, there are some cases in which mutual insurance companies have changed their capital structure through the creation of a mutual holding company. In those situations, the insurance companies issue stock to the holding company and will have common capital stock and gross paid in and contributed surplus accounts. Unassigned funds represented 61% of the industry surplus as of December 31, 2018.

SUMMARY

This chapter has explained the basic structure of the statutory balance sheet and has introduced some of the more significant and relevant accounts. An actuary's involvement is often primarily focused on the loss and LAE reserves, which are the largest liability on the balance sheet, but it is also important for an actuary to understand the bigger picture of an insurer's balance sheet in order to better assess the overall financial health of an insurance company.

In Chapter 13. *Overview of Schedules and Their Purpose*, we will discuss other schedules in the Annual Statement that provide details beyond what we have touched upon here. We will also discuss how that additional detail can be used with the contents of the balance sheet to assess the financial health of an insurance company.

## CHAPTER 8. THE STATUTORY INCOME STATEMENT: INCOME AND CHANGES TO SURPLUS

While the balance sheet is of key importance to regulators and the focal point of statutory accounting, the income statement is of equal importance to the ongoing viability of an insurance company. The income statement illustrates the revenue, expenses and net income of an insurance company.

The income statement is presented on the top portion of the Statement of Income on page 4 of the Annual Statement and provides the three sources of income, before federal and foreign income taxes and dividends to policyholders, separately: underwriting income, investment income and other income.

A sample of the statutory income statement for the industry as of December 31, 2018, is presented in Table 4.[17]

TABLE 4

**Statement of Income, Income Section: Total U.S. Property/Casualty Insurance Industry U.S. 2018 Statutory Financials, NAIC Format (USD in 000s)**

| Line | Description | Amount |
|---|---|---|
| 1. | Premiums earned | 599,736,478 |
| 2. | Losses incurred | 364,129,084 |
| 3. | Loss adjustment expenses incurred | 64,189,428 |
| 4. | Other underwriting expenses incurred | 167,668,693 |
| 5. | Aggregate write-ins for underwriting deductions | 1,026,092 |
| 6. | Total underwriting deductions | 597,093,278 |
| 8. | **Underwriting income** | **2,618,240** |
| 9. | Net investment income earned | 57,036,856 |
| 10. | Net realized capital gains (losses) less capital gains tax | 10,691,626 |
| 11. | **Investment income** | **67,728,482** |
| 12. | Net gain (loss) from agents' or premium balances charged off | (1,674,331) |
| 13. | Finance and service charges not included in premiums | 3,725,717 |
| 14. | Aggregate write-ins for miscellaneous income | (690,778) |
| **15.** | **Other income** | **1,360,608** |
| **16.** | **Net income before dividends to policyholders and federal/foreign income tax** | **71,707,330** |
| 17. | Dividends to policyholders | 3,709,994 |
| 19. | Federal and foreign income taxes incurred | 7,244,680 |
| **20.** | **Net income** | **60,752,655** |

As shown in Table 4, the net income for the industry during 2018 was $60.8 billion. The subtotals for each source of income show that the industry experienced gains in underwriting, investment income and other income during 2018. Each of the three sources of income is discussed further below.

[17] Accessed via a sector-specific information and research firm in the financial information marketplace.

## UNDERWRITING INCOME

Underwriting income is the most familiar and relevant source of income to most actuaries. Underwriting income is calculated as earned premium minus loss and loss adjustment expense (LAE), other underwriting expenses incurred, any aggregate write-ins for underwriting deductions and net income of protected cells (not shown). We note that aggregate write-ins and net income of protected cells are generally immaterial if not 0.

Actuaries are typically involved in estimating incurred losses and LAE and possibly in the calculation of earned premium, so these terms should already be familiar. On the income statement, each of the amounts labeled incurred presented also include the ultimate amount of those liabilities that occurred in the current year, and any changes in the ultimate amount of the liabilities that occurred in previous years (as shown in the formula below).

Income statement incurred = Current period ultimate + Change in prior period ultimate

where,

Change in prior period ultimate = (total all periods ultimate at end of period – total all periods ultimate at beginning of period) - current period ultimate

Actuaries may be less familiar with the item labeled "other underwriting expenses incurred." Further discussion on this other underwriting expense category is provided below.

*Other Underwriting Expenses Incurred (Line 4)* [18]

We already encountered other underwriting expenses briefly during our discussion of the liability for "Other Expenses (Excluding Taxes, Licenses and Fees)" in Chapter 7. *Statutory Balance Sheet: A Measure of Solvency*. The "Other Expenses" account represents all other expenses that were incurred but not paid at the end of the fiscal year, while this line on the income statement represents the total amount of other expenses incurred during the course of the year, whether or not they have already been paid.

As shown in Table 4, the amount of the other underwriting expenses that were incurred by the industry in 2018 was $167.7 billion, which is about 28% of net premiums earned in 2018. The magnitude of these other underwriting expenses highlights the importance of other underwriting expenses to the profitability of the industry and the importance of ensuring that they are accurately reflected in the financial statements.

Expense accounting requires that expenses be allocated in three ways:

1. NAIC operating expense classifications, which represent various types of expenses, some of which have sub-types. These 24 types are listed in the rows Underwriting and Investment

[18] Aligns with *IASA* Chapter 8.

Exhibit (U&IE), Part 3. Examples of these expense classifications are "commission and brokerage," "salary and related Items," and "taxes, licenses and fees." It is suggested that the reader review the U&IE, Part 3, now to see the full list of classifications.

2. Expense categories, which are broader groupings of expenses that align with the different operational functions of an insurance company. There are three of these broad categories: LAE, other underwriting expenses and investment expenses. These categories are presented in the columns of the U&IE, Part 3.

3. Line of business, of which there are 33, some of which have sub-lines. These lines of business are listed in the U&IE, Part 2A. The lines of business used for expense reporting are similar to those lines of business used in Schedule P, but not the same.

Each time an insurance company has an expense, the appropriate expense classification needs to be determined and an allocation must be made by line of business and expense category. In some cases, the entire amount of the expense can be specifically identified with one expense classification, within one expense category and for one line of business (for instance, a commission paid on a policy within a specific line of business); however, this is often not the case, such as the salary of an employee who oversees several products and functions. In those instances, an allocation of that expense must be made. Some expenses may require several allocation steps.

When an allocation is required, it will be performed based on information that is relevant to that expense. Examples of potential allocation bases are policy counts, which may be appropriate in the case of policy administration expenses; employee headcount, which may be reasonable for supervisors' salaries; or other measures of business or employee activity.

An example of a complex expense allocation would be one related to the rent that is paid for a home office that serves as a center for all operating functions. The allocation process could take place as follows:

- This expense can be specifically identified as the "rent and rent items" expense classification and therefore assigned fully to that classification.

- Because the home office is used for all company functions, its expenses would need to be allocated between all three categories: LAE, other underwriting expenses and investment expenses. One possible approach to this is to allocate the rent to those three categories by headcount of personnel associated with each function.

- The home office is also the base for all lines of business, so the expenses may be allocated to each line of business by premium volume. This allocation to line of business could differ by expense category.

The result of the first two of these allocations can be observed in the U&IE, Part 3, and the line of business allocation is reflected in the Insurance Expense Exhibit, Part 2, which will be discussed in more detail in Chapter 18. *Insurance Expense Exhibit*.

Guidance for allocation of expenses is provided in the NAIC Annual Statement Instructions, and also in Statement of Statutory Accounting Principles (SSAP) 70, *Allocation of Expenses*. These are the sources of the uniform classifications and categories that are described above, as well as additional allocation rules. In general, the guidance indicates that specific identification of expenses is preferable to allocation but that when allocation is required, it should be apportioned based on pertinent factors or ratios such as premium, number of claims or headcount. The decision to allocate and the factors or ratios that are used when allocation is required will require judgment on the part of a company.

While the topic of expense accounting and specifically other underwriting expenses may seem of questionable relevance to an actuary, it is important to have a basic awareness and knowledge of the topic. The reason for this is twofold.

First, the overall level of company expenses will directly affect the pricing (or the adequacy of pricing) of its insurance products. A company with lower expenses relative to its competitors has the potential to be more competitive and or more profitable. Actuaries can contribute by participating in the planning and control of expenses.

Second, if the relative allocation of expenses across functions and products is not accurate, it can lead to subsidies between products that may obscure the true profitability of those products and lead to inefficient allocation of resources or even anti-selection. An actuary who understands expense allocation can prevent or minimize such subsidies and their consequences by striving to allocate expenses as accurately as possible.

The expense allocation process described above and presented in the U&IE is the driver of the other underwriting expense account on the income statement, as well as other references to expenses elsewhere in the Annual Statement.

## INVESTMENT INCOME[19]

Investment income is an important source of income to insurance companies and a unique aspect of an insurer's business relative to other industries. The importance of investment income was already highlighted by the summary of the industry income statement. There we saw that in 2018 the insurance

[19] Aligns with *IASA* Chapter 9.

industry's positive net income was nearly entirely attributable to investment income, with limited contribution from underwriting and other income.

Because there is a delay (significant in some cases) between the time insurers receive premiums and the payment of claims, they have an opportunity to earn investment income on those funds. This makes consideration of investment income fundamental to the pricing of insurance products, which is not the case for most other industries.

The investment income item on the income statement consists of the following:

- Net investment income earned
- Net realized capital gain (loss)

Net investment income earned is primarily related to interest and dividends received on investment assets held over the course of the year. Net investment income earned does not include changes to the prices of invested assets that are sold (those are included in net realized capital gain described below). Furthermore, it is recorded on an accrual basis, meaning that it is reflected in the year in which it is earned and not necessarily the year in which the actual cash related to the income is received. The amount of this income is shown net of investment expenses and other costs, but gross of federal income taxes, on the income statement.

Net realized capital gain (loss) generally results from the sale of investments for more or less than original cost, adjusted for the amortization of premiums or accretion of discounts (amortized cost). Realized losses also result from impairment adjustments. Certain investments (primarily common stock) are recorded at fair value. The changes in the value of these investments (unrealized gains (losses)) are not included as income and instead reflected as direct adjustments to surplus. These direct adjustments to surplus are necessary because these items do not flow through net income for the current period, but the surplus must still be adjusted to maintain the admitted assets equal liabilities plus surplus relationship.

In 2018, industry net investment income earned was $57 billion, and the net realized capital gain was $10.7 billion. Detail of both the net investment income and the net realized capital gain (loss) amounts that are shown in the income statement is provided on page 12 of the Annual Statement, which includes the Exhibit of Net Investment Income and the Exhibit of Capital Gains (Losses). These exhibits provide the detail of both sources of income by asset class. The Exhibit of Net Investment Income also differentiates between the amount of income collected and the amount of income earned in the year and describes the deductions for investment expenses and other costs. The Exhibit of Capital Gains (Losses) shows the split of the gains (losses) between those gains (losses) that were realized on the sale or maturity of an asset and those that were due to impairments (labeled "other realized adjustments").

The details underlying these two exhibits are provided in Schedules A, B, D, DA and DB of the Annual Statement, which describe the assets held in each asset class as of the evaluation date of the financial statement and the assets that were sold, redeemed or disposed of during the current year.

While property/casualty actuaries are not typically involved in the investment reporting and valuation, they should have a basic understanding of these items due to their significance to product pricing and overall insurer operating results. For that reason, a discussion of the statutory reporting and valuation guidelines for each major asset class is included below. More detail will be provided on bonds and stocks because they represent the vast majority of assets held, but several other asset classes will also be discussed briefly.

*Bonds*

Bonds represent a majority of the assets held by insurance companies. On the Exhibit of Net Investment Income and the Exhibit of Capital Gains (Losses), bonds are reported in four categories: U.S. government bonds, bonds exempt from U.S. tax, other bonds (unaffiliated) and bonds of affiliates. The underlying detail is primarily provided in Schedule D, Part 1 (Long-Term Bonds Owned) and Schedule D, Part 4 (Long-Term Bonds Sold, Redeemed or Disposed of). Bonds that mature in one year or less are reported in Schedule DA, Part 1 (Short-Term Investments Owned).

The net investment income earned from bonds, as shown in the Exhibit of Net Investment Income, is based on the following four amounts:

1. Interest received during the year (Schedule D, Part 1, column 20 and Part 4, column 20).
2. Interest due and accrued (Schedule D, Part 1, columns 19 and 20).
3. Current year's (amortization)/accretion (Schedule D, Part 1, column 13 and Part 4, column 12)
4. Interest paid for accrued interest on dividends (Schedule D, Part 3, column 9).

The first of the four items, interest received during the year, represents all coupon payments that were received on bonds held during the year. This includes coupon payment on bonds owned at the end of the year and on bonds that were owned at the beginning of the year but sold, redeemed or disposed of during the year. This is presented on the basis of when the actual interest coupon was actually received, so an adjustment is required to convert it to an accrual basis. This adjustment is made by adding the change in the interest due and accrued account (the second item from above) over the last year to the interest received during the year.

The explanation of the third item above, current year's (amortization)/accretion, requires us to revisit basic bond valuation. Recall that when a bond is purchased, the actual purchase price is usually different from the face value due to the difference between the coupon rate on the bond and the market interest rates at the time of purchase. To provide the buyer with an effective interest rate equal to the current market interest rate, the bond is sold at either a discount or a premium to the face value. For financial reporting purposes, that discount or premium is then realized as either positive (in the case of a discount) or negative (in the case of a premium) interest income over the life of the bond. This is referred to as either the amortization of the premium or the accretion of the discount and is reported for each bond in Schedule D, Parts 1 and 4.

The following example illustrates the accounting for a bond purchased at a discount. Assume a five-year bond with face value of $100 is purchased for $90. The purchase price is less than the face value because the coupon rate on the bond is less than the current market interest rate. This difference between the face value and purchase price is referred to as a discount, and the amount of the discount is set such that the effective yield on the bond will equal the current market interest rates at the time of purchase. The $10 discount is realized over the remaining five-year duration of the bond as investment income in addition to the actual coupon payments, such that the effective yield in each period also matches the market interest rate at the time of purchase.

The same example can be reversed for bonds that are purchased at premium (when the coupon rate exceeds the market interest rate), and that premium is amortized as negative investment income over the life of the bond to achieve an overall investment income equal to the market interest rate at the time of purchase.

The fourth and final item above, interest paid on accrued interest and dividends, is related to coupon payments that are received on bonds acquired during the year. When a bond is acquired between coupon payments, the buyer of the bond (in this case the insurance company) is required to pay the seller of the bond the portion of the coupon payment that was earned while they owned the bond. This amount is presented on Schedule D, Part 3 (Long-Term Bonds and Stocks Acquired During Current Year), column 9 (Paid for Accrued Interest and Dividends).

Each of these three items (interest received, accrual/amortization of discount/premium, interest due and accrued, and payments for accrued interest on purchases) is reflected in the investment income collected and earned columns in the Exhibit of Net Investment Income.

The other aspect of investment income related to bonds, net realized capital gains (losses), comprises the following components:

- Realized gain (loss) on sale or maturity (Schedule D, Part 4, column16)
- Foreign exchange gain (loss) on disposal (Schedule D, Part 4, column 17)
- Other than temporary impairments recognized (Schedule D, Part 1, column 14 and Part 4, column 13)

Before we discuss these items in more detail, we will first review the basic statutory accounting concepts for bonds. When a bond is purchased, it is recorded at actual cost, including brokerage and other fees. This amount is recorded as the “actual cost” in Schedule D, Part 1, column 7 and Schedule D, Part 4, column 7. In each statutory Annual Statement after the purchase of the bond, the bond is recorded at “adjusted carrying value,” which is based on one of two amounts:

- Amortized cost
- The lower of amortized cost or fair value

Amortized cost represents the actual cost of the bond adjusted for the amortization of any premium or discount from the face amount (as described in the paragraphs above). Fair value generally refers to the value that an asset could be sold for in the open market.

For bonds that are designated as National Association of Insurance Commissioners (NAIC) 1 and 2 and carried at amortized cost, the adjusted carrying value of the bond is updated each year to reflect the amortization of premium or the accretion of discount. As a result, the adjusted carrying value of the bond will converge with the par value as a bond matures. For bonds that are designated as NAIC 3 through 6, the value of the bond is shown as the lesser of fair value or amortized cost. All of this information is summarized on Schedule D, Part 1, including the NAIC designation, actual cost, fair value, par value and book/adjusted carrying value.

To the extent the adjusted carrying value of a bond is adjusted to fair value, the adjustment is considered an unrealized loss and is reflected in Schedule D, Part 1, column 12. Once the bond is sold, the difference between the consideration received and the adjusted carrying value is considered a realized gain or loss and is recorded in Schedule D, Part 4, column 18. Many bonds held by insurance companies are designated as NAIC 1 or 2 and held to maturity, so there is never any capital gain or loss over the life of the bond.

Bonds denominated in a foreign currency will also be affected by changes in foreign exchange rates over time. These changes are reflected in the adjusted carrying value but are unrealized until the bond is sold, redeemed or otherwise disposed of. The change in the unrealized amount of this foreign exchange gain or loss is found on Schedule D, Part 1, column 15, and the amount of foreign exchange gain or loss that is realized upon disposal is found on Schedule D, Part 4, column 17.

The sum of the realized gain or loss on disposal and the foreign exchange gain or loss on disposal equals the total gain or loss on disposal, which is shown on Schedule D, Part 4, column 19.

One important exception to the reporting and valuation rule described above relates to the third source of the net realized capital gains and losses, which is referred to as “other than temporary impairments recognized.” In general, an impairment occurs when it is deemed probable that the insurer will not collect all amounts due according to the contractual terms of a debt security at the date of acquisition. Whether or not impairment is temporary is a subjective judgment of the company. Impairments can occur on bonds with any NAIC designation, and they result in the realized capital losses even though a bond has not been sold, redeemed or disposed.

The total realized capital gain or loss for a year is calculated in the Exhibit of Capital Gains (Losses). Column 1 represents the “Realized Gain (Loss) On Sales or Maturity,” which is calculated in Schedule D, Part 4, and shown in column 18 of that exhibit. Column 2 is labeled “Other Realized Adjustments” and includes the foreign exchange gain (loss) on disposal and other than temporary impairments recognized in the first year.

*Stocks*

Like bonds, investment income from stocks comprises investment income earned and realized capital gains.

Preferred stocks and common stocks are reported on separate lines on the Exhibit of Net Investment Income and the Exhibit of Capital Gains (Losses), and they have separate supporting schedules, Schedule D, Part 2, Section 1 and Section 2, respectively. Disposals of preferred and common stocks are reflected in Schedule D, Part 4.

Investment income for stocks is simply the amount of dividends received during the year plus the change in the accrual for dividends declared but unpaid (dividends are accrued on the ex-dividend date). These dividends are included in Schedule D, Part 2-Section 2, column 11 for stocks owned at year end and in Schedule D, Parts 4 and 5, column 20 for stocks sold during the year.

When either common stocks or preferred stocks are purchased, the actual cost plus any commissions or taxes becomes the initial carrying value. Subsequently, the valuation of preferred stocks and common stocks differ, so each is discussed separately.

Common stocks of unaffiliated companies listed on the major U.S. exchanges (NYSE and NASDAQ) are recorded at fair value. Changes to fair value after purchase are recorded as unrealized valuation increases (decreases) in Schedule D, Part 2, Section 2, column 13. When a stock (common or preferred) is disposed of, the difference between the consideration received and the original cost is recorded as a realized gain (loss) on disposal and a foreign exchange gain (loss) on disposal (if applicable) in Schedule D, Part 4, columns 17 and 18.

The rules governing the accounting for investments in subsidiaries, controlled and affiliated entities are complex and beyond the scope of this publication. A brief description of the accounting for investments in insurance company affiliates is discussed in the RBC chapter of this publication (see Chapter 19. *Risk-Based Capital*), where accounting background is needed on the accounting for determination of the asset risk charge.

The valuation of preferred stock of unaffiliated entities is dictated by the form of the instrument and the designation assigned by the NAIC Securities Valuation Office. The two common forms of preferred stock are redeemable and perpetual (i.e., non-redeemable) preferred stock. Redeemable preferred stock, also known as callable preferred stock, is preferred stock that is redeemable at the option of the issuer at a specified maturity date or after a specific period of notice, for a preset price. Perpetual preferred stock is preferred stock with no maturity date that cannot be redeemed by the issuer. For redeemable preferred stock, the highest two designation categories are recorded at the original purchase price (i.e., cost) plus brokerage and other related fees, with any discount or premium amortized over the life of the redeemable preferred stock; for perpetual preferred stock, the highest two designation categories are recorded at fair value; for redeemable and perpetual preferred stock, the lower four designation categories are recorded at the lower of cost, amortized cost or fair value.

As with fair value changes, market value changes to common and preferred stock after purchase are also shown in Schedule D, Part 2, Section 2, column 13 as unrealized valuation increases (decreases). Again, when a stock is disposed of, the difference between the consideration received and the original cost is recorded in Schedule D, Part 4, columns 17 and 18 as a realized gain (loss) on disposal and a foreign exchange gain (loss) on disposal (if applicable).

Both common stocks and preferred stocks are subject to impairment charges if there is a decline in fair value that is deemed to be "other than temporary" by the company. This determination must be made by the company based on available information (e.g., published reports, bankruptcy notifications). When impairment is made, it is recorded in Schedule D, Part 2, Section 1, column 17 and Schedule D, Part 2, Section 2, column 14 (as well as Part 4 for stocks that are disposed of during the year). Impairments made in a given year are included in the "Other Realized Adjustments" of the Exhibit of Capital Gains.

Each component of investment income from stocks is included in the Exhibit of Net Investment Income (page 12). Dividends received plus the change in dividends declared but unpaid are shown in the Exhibit of Net Investment income. In the Exhibit of Capital Gains (Losses), the realized gain or loss on disposal is shown in column 1, and the realized foreign exchange gain (loss) on disposal and other than temporary impairments are shown in column 2.

*Cash, Cash Equivalents and Short-Term Investments*

This class includes assets that are immediately convertible to cash and have an original maturity of one year or less. Short-term investments are reported in Schedule DA, Part 1, cash is reported in Schedule E, Part 1, and cash equivalents are reported in Schedule E, Part 2.

The short-term investments presented in Schedule DA, Part 1 are composed of bonds or other securities with a maturity of one year or less (at acquisition) and follow the same reporting and valuation rules as long-term bonds. When a short-term bond or other investment is purchased, the security is recorded at cost and the premium or discount (if any) is amortized or accreted until maturity. Other than temporary impairments are also possible, though they are less common given the short duration of these investments.

The reporting and valuation of cash and cash equivalents is similar but relatively simpler than short-term investments, as evidenced by the fewer columns that are included in Schedule E, Parts 1 and 2 relative to Schedule DA.

*Derivatives*

Derivatives are financial contracts between two parties for which the value depends on the performance of other assets or variables. While derivatives are not a major asset class for most property/casualty insurance companies, they are becoming more common, and they are of heightened importance due to

the financial crisis that occurred in the late 2000s. During the financial crisis, one large insurance group nearly collapsed due to derivatives that had been sold by one of its units.

A list of outstanding derivatives owned, sold ("written"), and terminated during the year is provided in Schedule DB. Companies that are not involved in any open derivatives may omit Schedule DB.

Schedule DB provides the number of contracts for each derivative and the notional amount, which represents the number of units of the underlying asset that are involved. The original trade date and the maturity or expiration date are also provided. The two prices listed are the transaction price, which is the price that the company agreed to buy or sell at, and the reporting date price, which is the current price.

One common reason a company may buy or sell derivatives is to hedge, or offset, the exposure they have to changes in price for an underlying asset or variable, such as an interest rate. For this reason, Schedule DB includes information on the item that is hedged with each derivative position and on the type of risk being hedged.

If a derivative position is held for hedging purposes and a company can demonstrate that the hedge has sufficiently reduced the risk related to the specific underlying asset or assets (known as a "highly effective" hedge), then that derivative may qualify for hedge accounting. Under hedge accounting, the derivative is accounted for in the same way as the asset that is hedged, which allows for any changes in the value of the hedged asset and the derivative to offset (or be unrecorded in cases where the hedged item is recorded at amortized cost). For instance, if an interest rate swap is held to specifically hedge the value of a bond portfolio and that interest rate swap qualifies as a highly effective hedge (i.e., effectively neutralizes any changes in the value of the bond portfolio), then that interest rate swap can be accounted for on an amortized cost basis.

If a derivative no longer qualifies for hedge accounting (i.e., is no longer highly effective), then the mark-to-market accounting method should be used, and any changes in the fair value of the derivative should be recorded as unrealized gains (losses) directly to surplus in the current period. The accounting for derivatives used in income-generation transactions depends on the nature of the transaction and the accounting for the covering asset or underlying interest.

Schedule E is also related to derivatives and lists the counterparty exposure for all derivatives that are open at year-end. Counterparty is the person or institution on the other side of a transaction. This is important because it provides information to the regulators and any other users of the financial statements regarding any concentration of exposure to a specific counterparty. If the exposure to a counterparty becomes large enough that it is material relative to the surplus of a company, it should be considered as a potential warning sign.

Derivative accounting is very complex and beyond the scope of this publication. More detail regarding derivative accounting can be found in SSAP 86, *Derivatives.*

*Other Sources of Investment Income*

Although we have covered the largest and most common sources of investment income, there are other sources. For additional information on those other sources, or for additional detail regarding any of the sources discussed here, refer to the corresponding statutory accounting guidance.

*Investment Guidelines*

As discussed, there is a variety of investment asset classes available to insurers, and there is a wide range of specific assets within each class. When purchasing a bond, an insurer needs to make decisions on the type of issuer (e.g., government, corporate, asset-backed), industry, quality, maturity and country. Each company will make these decisions based on a set of investment guidelines, which are governed by state investment laws applicable to insurers. Each state has established investment laws, which provide guidance and limits regarding the allowable investments for insurers domiciled in their jurisdiction. Although the NAIC has established model laws governing various aspects of insurers' operations (including investments), the laws adopted by individual states may vary from those model laws. For purposes of this discussion, we will focus on the NAIC Model Investment Law.[20] The NAIC Model Investment Law allows for two alternative types of investment guidelines, which are referred to as Defined Limits and Prudent Person.

The Defined Limit system of investment guidelines follows a rule-based approach and prescribes specific quantitative limits for the invested assets that a company may hold. Examples of some of the prescribed limits include the following:

- 5% limit of admitted assets with any single issuer (exceptions for government bonds)
- 1% limit of admitted assets with any single issuer with a designation of NAIC 3
- 0.5% limit of admitted assets with any single issuer with a designation of NAIC 4 or lower
- 20% limit of admitted assets in <u>all securities</u> designated NAIC 3 or lower
- 10% limit of admitted assets in <u>all securities</u> designated NAIC 4 or lower
- 5% limit of admitted assets in <u>all securities</u> designated NAIC 5 or lower
- 1% limit of admitted assets in <u>all securities</u> designated NAIC 6
- 25% limit of admitted assets or 100% of surplus in all common stocks

The Prudent Person system of investment guidelines follows a principles-based approach and requires an insurance company to develop its own investment guidelines. If a company chooses to use the Prudent Person approach, it should develop the investment guidelines with the protection of the policyholder in mind, and it should consider the specific investment expertise and resources available.

*Measuring Investment Performance*

[20] NAIC, *Model Laws, Regulations, Guidelines and Other Resources* MDL-280, 282, 283, and 340, https://www.naic.org/prod_serv_model_laws.htm2019.

Although investment income is a critical aspect of an insurer's profitability, it can be difficult to measure investment performance and make comparisons between insurance companies. Several factors to consider are the size of the asset base of a company, the level of risk inherent in a company's investment portfolio and the impact of taxes on a company's investment income. Each of these considerations will be discussed below.

It may be tempting to compare the amount of investment income from one company to another or to create the ratio of investment income to written or earned premium. Neither of these approaches is an accurate measure of investment performance because they ignore the size of a company's invested assets. All things being equal, a company with 10 times the invested assets of another company would also be expected to generate 10 times the investment income. For that reason, one metric to consider is the ratio of the investment income for the year to the average invested assets.

That ratio will provide a basic comparison between two companies and how much investment income they are generating relative to their invested assets. However, this ratio does not consider the inherent risk to the assets that are being held. If one company has a significantly higher percentage of its assets in common stocks or lower-rated bonds, it would be expected to achieve a higher investment return during a good year, but the level of risk is significantly higher. While there may not be a single ratio or metric that measures this inherent level of risk, it is at least possible to qualitatively compare the types of assets held by two companies to see if there are significant differences.

Measurement and comparison of investment performance is also difficult due to taxes. As discussed earlier in this chapter, net investment income earned is presented on the income statement before the effects of federal income taxes. On the other hand, net realized capital gain (loss) is presented after capital gains tax. Two companies that had the same net investment income earned may be subject to different taxation. The full implications of the impact of taxes on investment income are beyond the scope of this publication, but a user of the financial statements should be aware of this potential difference and seek input from a tax professional as needed.

## OTHER INCOME

As shown in the summary of the industry income statement, the other income category is relatively small compared to the other two categories. For that reason, only a few of the significant sources of other income will be discussed below. Although they are not technically considered to be part of other income, dividends to policyholders and federal and foreign income taxes are also discussed below because they are part of the consideration of net income.

### *Net Gain (Loss) from Agents' or Premium Balances Charged Off (Line 12)*

In Chapter 7. *Statutory Balance Sheet: A Measure of Solvency*, we discussed the assets related to uncollected and deferred agents' balances. If a company determines that a portion of those balances will not be collected, those balances should be charged off as a loss and are recorded as an expense under this category in other income. Conversely, if an agents' balance that was previously written off is

recovered, that recovery would be included as a gain in this category. Losses can be used to offset gains that occur during the same period.

*Finance and Service Charges not Included in Premiums (Line 13)*

Insurers will often offer financing or payment plans to the insured that allow the insured to spread out premium payment over time. Typically, the insured will pay an additional flat service charge to pay through these financing or payment plans. Those service charges are not recorded as a part of written or earned premium and are instead included in this category under other income.

*Aggregate Write-ins for Miscellaneous Income (Line 14)*

While the amounts included as miscellaneous write-ins are not usually material, several of the common entries are the following:

- Gain or Loss on Sale of Equipment: When furniture, equipment or automobiles are sold, the sale price may differ from the current depreciated cost. That difference may be recorded as either a gain or a loss under other income.
- Retroactive Reinsurance: An insurer may purchase reinsurance on existing liabilities, and the reinsurance premium paid may be more or less than the previously recorded value of the liabilities transferred. That gain or loss is recorded as other income.
- Gain or Loss on Foreign Exchange: When payments are made or received in a foreign currency, the ultimate settlement of the payment may be at a different exchange rate than the exchange rate at which the payment was originally recorded, and the resulting gain or loss is recorded as other income. This does not include changes in investment income due to foreign exchange, which were already discussed.
- Corporate Expense: Some insurers will record some corporate expenses that are not allocable to underwriting or investments, such as national advertising, to other expenses.
- Fines and Penalties of Regulatory Authorities: As per the Annual Statement Instructions, all fines and penalties imposed by regulatory authorities must be disclosed separately, regardless of materiality.

*Dividends to Policyholders (Line 17)*

The board of directors of a mutual insurance company may elect to pay a dividend to the policyholders. A dividend is effectively a return of a portion of the premium that was originally paid by the policyholder, and for a dividend to be paid, there are typically state requirements. When the decision is made to pay a dividend, it is considered to have been “declared,” and payment won’t actually be issued until a later date.

This item on the income statement includes dividends that were actually paid plus the change in accrued dividends.

*Federal and Foreign Income Taxes Incurred (Line 19)*

All foreign and federal income taxes that are incurred during the current year, including amounts related to prior years, are recorded on this line. This amount of income taxes incurred represents an estimate of the current income taxes incurred during the reporting period and excludes any amounts that would be deferred to later years. Further detail on taxation appears in Chapter 26. *Taxation in the U.S.*

## CHAPTER 9. CAPITAL AND SURPLUS ACCOUNT

In addition to various income items that have already been discussed, the Statement of Income within the Annual Statement also includes a section referred to as the "Capital and Surplus Account." This section is important because it reflects certain changes in surplus that are not recorded in the income statement and it reconciles the beginning surplus to the ending surplus for the reporting period.

In its simplest form, the key components of the Capital and Surplus Account are listed in Table 5 as follows:

Current Year Surplus (line 39) =
- Prior Year Surplus (line 21)
- \+ Current Year's Net Income (line 22)
- \+ Other Surplus Changes (lines 24 through 31)
- \+ Additional Capital Contributions (lines 32 and 33)
- \+ Stockholder Dividends (line 35)[21]

Under Statutory Accounting Principles, certain transactions are recorded directly to surplus, so the Other Surplus Changes component includes a number of important subcomponents. Table 5 is an excerpt of the Capital and Surplus Account for the U.S. property/casualty insurance industry as of December 31, 2018.[22]

[21] Stockholder dividends represent a charge to surplus for amounts paid during the year plus the change in the amount of dividends declared but unpaid during the year. These amounts are shown as a negative number in line 35 of the Capital and Surplus Account and therefore added, as a negative number, to calculate current year surplus. Table 5 demonstrates this calculation.

[22] Accessed via a sector-specific information and research firm in the financial information marketplace.

TABLE 5

**Statement of Income, Capital and Surplus Account Section: Total U.S. Property/Casualty Insurance Industry U.S. 2018 Statutory Financials, NAIC Format (USD in 000s)**

| Line | Description | Amount |
|---|---|---|
| 21. | Surplus as of December 31 of prior year | 765,448,283 |
| 22. | Net income | 60,752,655 |
| 24. | Change in net unrealized capital gains (losses) less capital gains tax | (45,399,542) |
| 25. | Change in net unrealized foreign exchange capital gain (loss) | (585,099) |
| 26. | Change in net deferred income tax | 324,683 |
| 27. | Change in nonadmitted assets | (818,259) |
| 28. | Change in provision for reinsurance | 139,053 |
| 31. | Cumulative effect of changes in accounting principles | 58,650 |
| 32. | Capital changes | (197,375) |
| 33. | Surplus adjustments | 9,197,233 |
| 35. | Dividends to stockholders | (32,085,308) |
| 37. | Aggregate write-ins for gains or losses to surplus | 235,593 |
| 38. | Changes to surplus for the year (lines 22 through 37 and **) | (8,526,468) |
| 39. | **Surplus as regards policyholders, December 31 current year** | **756,921,815** |

The first item of Table 5, surplus as of December 31 of prior year, is taken directly from the Capital and Surplus Account from the prior year. Net income comes from the Statement of Income. The remaining rows describe the direct adjustments to surplus. An explanation of some of the important adjustments is below.

*Change in Unrealized Capital Gains (Losses) (Line 24)*

We previously discussed the concept of realized and unrealized capital gains in the discussion of investments and investment income. Capital gains (losses) occur when the carrying value of an asset changes, but those capital gains (losses) are only realized when an asset is either disposed of or impaired.

Recall that in the investment income section of the Statement of Income, realized capital gains (losses) are recorded in income, but unrealized capital gains (losses) are not. Unrealized capital gains (losses) occur when the fair value of investments carried at fair value changes during the reporting period. Because these unrealized capital gains (losses) are reflected in the balance sheet but not in net income, an adjustment to surplus is required to maintain the Admitted Assets – Liabilities = Surplus relationship.

Because the current year's surplus is being calculated with the prior year's surplus as a starting point, the required adjustment is the *change in* net unrealized capital gains (losses) relative to the prior year,

not the absolute amount of unrealized capital gains for the current year. This amount can be found in column 4 of the Exhibit of Capital Gains (Losses).

Unrealized capital gains (losses) most frequently occur with respect to stock holdings that are held at fair value because any change in the fair value from year to year affects capital gains (losses). Bonds may also produce unrealized capital gains, but this would typically only occur when a bond is designated as National Association of Insurance Commissioners (NAIC) 3 or lower and is therefore recorded at fair value. Perpetual preferred stock and redeemable preferred stock that is designated in the four lowest NAIC categories could also produce unrealized gains since they also may be recorded at fair value.

*Change in Net Unrealized Foreign Exchange Capital Gains (Losses) (Line 25)*

This item is similar to the change in unrealized capital gains (losses), but it is specifically related to unrealized capital gains (losses) due to changes in the foreign exchange rate. When an asset is purchased in a foreign currency, any subsequent change in value due to changes in foreign exchange rates as long as that asset is held are considered to be unrealized capital gains (losses). This amount can be found in column 5 of the Exhibit of Capital Gains.

*Change in Net Deferred Income Tax (Line 26)*

Deferred tax assets (DTAs) and deferred tax liabilities (DTLs) were already discussed in the previous discussion of the balance sheet (Chapter 7. *Statutory Balance Sheet: A Measure of Solvency*). DTAs and DTLs can arise for a variety of reasons, but the most common are differences in statutory and tax accounting (such as in the discounting of loss reserves, unrealized gains/losses and unrealized foreign exchange gains/losses) and carryforward of previous operating losses to future tax years. DTAs are only considered admitted assets if a strict admissibility test is met. All surplus adjustments are recorded net of deferred taxes if there is a difference in the treatment of the item for statutory accounting and tax purposes. Similar to unrealized capital gains, net DTAs affect the balance sheet but do not flow through to income. As a result, a direct adjustment is required to surplus to maintain the equality of Admitted Assets – Liabilities = Surplus. The change in deferred taxes is determined before consideration of the nonadmitted portion because the change in nonadmitted DTAs is captured with all the other nonadmitted assets.

*Change in Nonadmitted Assets (Line 27)*

The concept of nonadmitted assets was introduced in the previous discussion of the balance sheet. Nonadmitted assets are assets that are not allowed to be considered part of surplus for the purpose of statutory accounting. This creates a violation of the Admitted Assets – Liabilities = Surplus relationship.

As with the previous items, the adjustment required is based on the *change* in nonadmitted assets relative to the prior year, not the current absolute amount. There is a specific exhibit in the Annual Statement, the Exhibit of Nonadmitted Assets (page 13 of the 2018 Annual Statement), which calculates the change in nonadmitted assets relative to last year by asset class and in total. The total change in

nonadmitted assets from that exhibit is the source for the amount used as the change in nonadmitted assets in the Capital and Surplus Account.

*Change in Provision for Reinsurance (Line 28)*

Like nonadmitted assets, the provision for reinsurance is a concept that reduces surplus and is unique to statutory accounting. While nonadmitted assets are essentially treated as assets that are excluded from surplus, the provision for reinsurance is treated as an additional liability on the balance sheet (though no real liability exists). The provision for reinsurance is included on the balance sheet, but it does not flow through to the Statement of Income, which is why a direct adjustment to surplus is required.

The Liabilities page of the balance sheet shows the current year and the prior year provision for reinsurance, so the change in the provision for reinsurance can be calculated from those amounts. The amount of the change in the provision for reinsurance is included in the Capital and Surplus Account.

*Cumulative Effect of Changes in Accounting Principles (Line 31)*

Sometimes a company must adopt changes in accounting principles, either due to new accounting guidance, or a change in accounting policy. When such a change occurs, a company must determine the cumulative effect of the change (as if the accounting principle had always been in place) as of the beginning of the reporting period the change is made. The cumulative effect of the change is recorded as a direct adjustment to surplus.

Although an entry for a cumulative effect of changes in accounting principles could be required for many reasons, here are two examples:

- Anticipated salvage and subrogation: Companies have the option to record unpaid losses net of anticipated salvage and subrogation. When a company elects to change the recording from gross of salvage and subrogation to net of salvage and subrogation, the cumulative effect of this change should be reported here.
- Tabular discounting: When companies record loss reserves for life pension reserves, they have the option to discount for interest and mortality according to a prescribed actuarial table and interest rate. This is referred to as tabular discounting. When a company makes a change in its use of tabular discounting, the cumulative impact of that change should be recorded here.

*Capital Changes and Surplus Adjustments (Lines 32 and 33)*

The lines for capital changes and surplus adjustments primarily describe inflows and outflows of capital from the new issuance of stock or return of capital, as well as transfers from surplus to capital when stock dividends are issued. When new stock is issued, the portion of the proceeds related to the par

value of that stock is recorded as paid-in capital on line 32.1. The portion of the proceeds in excess of the par value is recorded as paid-in surplus on line 33.1.

*Dividends to Stockholders (Line 35)*

The board of directors of an insurance company may elect to pay a dividend to the stockholders, which serves as a return on the stockholders' investment. Stockholder dividends may only be paid out of unassigned surplus, which is surplus that is not assigned to the par value or paid in value of stock, special surplus funds, surplus notes or treasury stock. There are also specific state requirements that must be met for a stockholder's dividend to be paid.

The amount shown as dividends to stockholders equals the actual amount paid during the year plus the change in the amount of dividends declared but unpaid during the year.

SUMMARY

This section described the three sources of income on the Statement of Income (underwriting, investment and other) and discussed the Capital and Surplus Account within the Statement of Income, where total change in surplus is determined.

While actuaries are most familiar with the aspects relating to underwriting income, they should also be familiar with investment income, given the significance of investment income to the pricing and profitability of an insurer. Understanding the various items that affect the change in surplus is also important because this not only provides the link between the profitability and the solvency of a company (or the income statement and the balance sheet), but it also highlights several direct adjustments to surplus that may require input from an actuary.

## CHAPTER 10. NOTES TO FINANCIAL STATEMENTS

We have now covered the numerical aspects of three of the primary financial statements: the balance sheet, income statement, and statement of capital and surplus. For some of the balances, Statutory Accounting Principles (SAP) requires additional qualitative or quantitative information in order to more fully portray the financial condition of an insurer. The Notes to Financial Statements include some of this additional qualitative and quantitative information.

This publication will focus on specific notes that often require direct involvement by actuaries and the notes that are potentially relevant to actuaries. The notes within each of those two categories are described below:

- Notes often requiring direct involvement by actuaries:
    - Reinsurance (23)
    - Change in incurred loss and loss adjustment expense (LAE) (25)
    - Premium deficiency reserves (30)
    - Discounting of liabilities for unpaid loss and LAE (32)
    - Asbestos/environmental reserves (33)
- Notes that are potentially relevant to actuaries:
    - Summary of significant accounting policies and going concern (1)
    - Events subsequent (22)
    - Intercompany pooling arrangements (26)
    - Structured settlements (27)
    - High deductibles (31)

The numbers listed next to each note above are the numbers corresponding to that note in the 2018 Notes to Financial Statements included in the Annual Statement Blank, which are the same as those in 2011. These numbers may change from year to year due to the addition or subtraction of the notes that are required, so these numbers will not be used in the rest of this discussion. Examples will be drawn from the 2018 Notes to Financial Statements for Fictitious Insurance Company (referred to as the 2018 Fictitious Notes). It is also suggested that the reader review an example of the Notes to Financial Statements from a current insurance company Annual Statement as they review this section.[23]

For each of the notes described, the following information will be provided:

- Information contained in the note
- Importance of the note to actuaries
- Example of information from the 2018 Fictitious Notes

[23] The Notes to the Financial Statements are included only in individual company Annual Statements, not in group Annual Statements.

Readers seeking more detail on any notes listed above or on other notes to financial statements can refer to either the National Association of Insurance Commissioners (NAIC) Annual Statement Instructions or the paper *Notes to the NAIC Property/Casualty Annual Statement* by Sholom Feldblum and Ralph Blanchard (October 2010).

NOTES OFTEN REQUIRING DIRECT INVOLVEMENT BY ACTUARIES

These five notes typically require direct input from the actuaries at an insurance company, though in each case the management of the company is ultimately responsible (and in some cases the actuary may be a member of management). Because actuaries will likely be the primary source of input in these cases, readers should review these notes in detail and understand what information is needed to complete them.

*Reinsurance*

The loss and LAE reserve liabilities on the balance sheet and the underwriting income on the income statement are expressed net of reinsurance. Given that reinsurance can significantly lower the loss and LAE reserves on the balance sheet and affect the level of surplus, disclosures regarding the reinsurance in place are important to assessing the financial health of a company. Actuaries typically estimate the ceded reserves on reinsurance contracts and are therefore directly involved in the preparation of this note.

In particular, it is important to understand the potential credit risk associated with the assumed reinsurance recoverables (the risk that the reinsurer will not pay). This note provides information on specific liabilities for which the credit risk may be heightened, such as unsecured recoverables, recoverables in dispute and recoverables that have been deemed uncollectible.

In addition to the assessment of credit risk, there are also some specific accounting rules related to reinsurance that require additional disclosure. The note includes several of these matters, namely the commutation of ceded reinsurance, retroactive reinsurance, reinsurance accounted for as a deposit and run-off agreements.

There are nine sections of this note labeled A through I. A brief summary is provided on each of these sections:

- Unsecured Reinsurance Recoverables (Section A): The credit risk related to recoverables with a specific reinsurer is often mitigated by the reinsured having access to a letter of credit, trust agreement or funds withheld. This note discloses reinsurers for which no such security exists, but only in cases where the recoverable from that reinsurer exceeds 3% of the reporting entity's (i.e., the reinsured's) policyholder surplus. The mention of a reinsurer in this note is not necessarily a problem because those reinsurers may be highly rated and financially sound. The amounts shown for each include paid losses billed but not yet collected, ceded reserves and ceded unearned premium.

- Reinsurance Recoverables in Dispute (Section B): Even when a recoverable is secured, it is possible for a reinsurer to dispute (or refuse to pay) a recoverable. A reinsurer may dispute either because they are unwilling to pay due to a disagreement on the coverage or amount or because they are unable to pay due to insolvency. A recoverable is considered to be in dispute once a formal written refusal to pay is received from the reinsurer. In addition to identifying a credit risk, recoverables in dispute might represent attempts by a financially troubled insurer to over-recover from reinsurers.

- Reinsurance Assumed and Ceded (Section C): Although unclear from the vague naming, this section includes information on ceding commissions to reinsurers related to the ceded unearned premium reserve. These ceding commissions received from reinsurers are treated as revenue by the insurer and therefore benefit the insurers' surplus position. This section helps regulators to identify situations where an insurer may be abusing ceding commissions to artificially enhance its surplus position, and it provides information on ceding commissions that would need to be returned in the event of cancellation. Specific disclosure is also required for contingent ceding commissions.

- Uncollectible Reinsurance (Section D): If an insurer deems that it is unlikely to collect a specific reinsurance recoverable, it must write off that recoverable as uncollectible and treat it as an expense. This section of the note includes a description of any recoverables that were written off as uncollectible during the course of the year. The disclosures in this note may help an actuary or other user of the financial statements to assess provisions set aside for future uncollectible reinsurance, which is reflected in the Provision for Reinsurance derived in Schedule F.

- Commutation of Ceded Reinsurance (Section E): A commutation is a "transaction which results in the complete and final settlement and discharge of all, or the commuted portion thereof, present and future obligations between the parties arising out of a reinsurance agreement."[24] This note requires disclosure of any commutations that occurred during the year. This information is important to a user of the financial statements because a commutation may cause a distortion to the income statement and balance sheet because the commutation payment received from the reinsurer may be reflected as a negative paid loss and the net loss reserves may increase to reflect the elimination of the reinsurance.

- Retroactive Reinsurance (Section F): Retroactive reinsurance refers to reinsurance that is purchased for liabilities that occurred prior to the effective date of the reinsurance contract. Retroactive reinsurance must be accounted for differently than normal prospective reinsurance to avoid distortion of the balance sheet and income statement. Instead of reducing the net loss reserves, retroactive reinsurance reserves are recorded separately as a write-in item on the balance sheet with any gain recorded in the income statement and as a restricted special

[24] SSAP 62R.

surplus amount. This section of the note includes disclosure of any retroactive reinsurance, including reserves transferred, consideration paid or received, paid losses reimbursed or recovered, special surplus generated, and other reinsurers involved in the transaction. This section allows a user of the financial statements to verify that retroactive reinsurance is being accurately accounted for and to understand its impact on the financial statements.

- Reinsurance Accounted for as a Deposit (Section G): To be accounted for as reinsurance, a reinsurance contract must meet certain risk transfer criteria. When a reinsurance contract does not qualify for reinsurance accounting, it must be accounted for as a deposit. This means that it is directly accounted for as a deposit asset or liability (depending on if amounts are owed from or to, respectively, other parties under the contract), instead of flowing through underwriting income. If a company has any reinsurance contracts that are accounted for as deposits, a schedule showing the historical changes to the balance since inception of each contract is included.

- Disclosures for the Transfer of Property and Casualty Run-off Agreements (Section H): Run-off agreements are reinsurance agreements intended to transfer the risks and benefits of a specific line of business or market segment that is no longer actively marketed by the transferring insurer to a third party. This third party is often another insurance or reinsurance company. If certain criteria are met, a run-off agreement can be accounted for differently than is typically required for retroactive reinsurance. If these criteria are met, the transferring entity records the consideration paid to the assuming entity as a paid loss. If the consideration paid by the transferring entity is less than the loss reserves transferred, the difference is recorded by the ceding entity as a decrease in losses incurred. As noted above, retroactive reinsurance that is not considered a run-off agreement is recorded as a separate item on the balance sheet with no reduction in incurred losses at the time of the transaction.

- Certified Reinsurer Rating Downgraded or Status Subject to Revocation (Section I): A certified reinsurer is an assuming insurer that has been certified as a reinsurer in the domiciliary state of the ceding insurer and secures its obligations in accordance with the requirements of *Appendix A-785, Credit for Reinsurance* of the NAIC Accounting Practices and Procedures Manual. Certified reinsurers that have their ratings reduced or their certified status revoked by the ceding company's state of domicile may have to provide increased collateral. This footnote requires disclosure of the impact on any reporting period in which a certified reinsurer's rating has been downgraded or its certified reinsurer status is subject to revocation and additional collateral has not been received as of the filing date.

In summary, this note is helpful to an actuary or other user of the financial statements because it identifies potential credit risks (Sections A, B, D and I) and identifies types of reinsurance that are subject to specific accounting treatment (Sections C, E, F, G and H). For the sections related to credit risk (A, B, D and I), the user of the financial statements may ask the following kinds of questions if material balances exist:

- Section A (Unsecured Recoverables): Why wasn't security provided? Are there concerns of the financial health of either the reinsurer or the reinsured? Was there a catastrophe that led to a large amount of recoverables? Are all of these unsecured recoverables concentrated with one reinsurer?

- Section B (Recoverables in Dispute): What is the point of disagreement with the reinsurer? Is the amount in dispute material to either the reinsured or the reinsurer? Are there legal opinions available on the validity of each side's claim?

- Section D (Uncollectible Reinsurance): What was the reason for the uncollectible reinsurance? Could other outstanding recoverables also be uncollectible in the future for the same or similar reasons? How long did it take the company to write off any uncollectible reinsurance that was disclosed?

- Section I (Certified Reinsurer Rating Downgraded or Status Subject to Revocation): What was the reason for the downgrade or revocation? Why wasn't the additional collateral provided as of the filing date?

The disclosures in this note are of specific interest to an actuary who is opining on a company's loss reserves because several of these items are referred to explicitly in the Statement of Actuarial Opinion (SAO).

A review of the 2018 Fictitious Notes indicates that Fictitious provided disclosures related to unsecured reinsurance, commissions and retroactive reinsurance. The other items were not applicable for the 2018 year.

*Change in Incurred Loss and Loss Adjustment Expense*

The total incurred loss and LAE for a year can be thought of in two categories: (1) loss and LAE that were incurred on liabilities occurring during the current accident year and (2) any changes in incurred loss and LAE from previous accident years. This note relates only to the second of these two items. The content of this note should include the amount of the change (i.e., reserve strengthening or weakening) in liabilities for previous accident years, the segments or lines of business that led to that change, and the reason for the change.

The importance of this note to the financial health of an insurance company is two-fold. First, the existence of a material change in prior accident years' incurred losses and LAE affects the current year's underwriting income and could obscure the true underlying experience of the current in-force business. A company that achieved positive underwriting income solely as a result of decreases to prior years' loss and LAE estimates may have profitability issues on their current business.

Second, recurring material changes in prior accident year incurred loss and LAE may be indicative of a bias or problem with a company's reserving process. For instance, if a company consistently experiences significant decreases in their estimates of prior accident years' losses, then there may be inherent conservatism to the company's process for establishing loss and LAE reserves. Schedule P provides additional information that may assist in this assessment, and it will be discussed in more detail in Chapter 15. *Schedule P*.

Actuaries should be familiar with the required content of this note so that they are prepared to provide input to management. Also, when reviewing a company's financial statements, actuaries may be in the best position to identify one of the two problems noted above. This note should be consistent with information included in a similar note to the annual Generally Accepted Accounting Principles financial statements and also to the one-year development column from Schedule P, Part 2 (with the exception of Adjusting & Other Loss Adjustment Expenses, which are included in this note but not in Schedule P, Part 2).

Finally, if the actuary is the Appointed Actuary for the company, the actuary may be called on to understand the difference in estimates underlying the loss reserves since the prior year's estimates and comment on those changes in the Appointed Actuary's Statement of Actuarial Opinion. For that reason, the actuary needs to be aware of the content of this note.

In the case of the 2018 Fictitious Notes, it is disclosed that the prior year-end total loss and LAE reserves developed favorably by $875,000, and several specific segments were cited as the major drivers of this favorable development. According to Fictitious' income statement, the company's net income in 2018 was $2.2 million. This tells the user of the financial statements that the favorable reserve development was a significant factor in the financial results of the company for the year. Chapter 12. *Five-Year Historical Data Exhibit* will provide guidance on how to assess whether this favorable development has been occurring consistently over time.

*Premium Deficiency Reserves*

Premium deficiency reserves must be recorded when the unearned premium of in-force business is not sufficient to cover the losses, LAE and maintenance expenses that will arise as that premium is earned. Companies have the option to consider investment income when performing this calculation. Also, before performing the calculation, the business should be grouped in a manner that is consistent with how it is marketed, serviced and measured.

Most insurance policies sold by insurance companies are priced with rates that are greater than the expected losses and expenses, especially after consideration of investment income. Furthermore, if there is a segment of the business that is underpriced, it may be a part of a larger grouping where the

deficiency in that segment is offset by other more profitable segments. For these reasons, the premium deficiency reserve will be zero for a majority of companies. However, there are cases where a non-zero premium deficiency reserve exists due to regulatory, competitive or other conditions that led to inadequate rates.

When a non-zero premium deficiency reserve does exist, a company may record it as either a write-in liability or a part of the unearned premium reserve on the balance sheet. When it is recorded as a part of the total unearned premium reserve liability, the Notes to Financial Statements is the only way to identify whether a premium deficiency reserve exists and the amount of the reserve.

In the note relating to premium deficiency reserves, the company must disclose the amount of the premium deficiency reserve. The company also needs to disclose whether investment income was considered in the determination of the premium deficiency reserve (although this is often disclosed in the accounting policy note).

This note is relevant to users of the financial statements because the existence of a premium deficiency reserve is usually a clear indication that issues of rate adequacy exist for at least the affected segment. However, the absence of a non-zero premium deficiency reserve does not necessarily indicate that rates for all business segments are adequate, due to the ability to consider investment income and to group segments into broad categories.

As a result of actuaries' involvement in the pricing and reserving of business, actuaries are in a position to provide input on whether a premium deficiency reserve is necessary and on the amount of the premium deficiency reserve. The analytical approach for this is beyond the scope of this publication, but there are other resources available that provide direction.

In the 2018 Fictitious Notes, the note on premium deficiency reserves indicates that at December 31, 2018, the company had liabilities of $0 related to premium deficiency reserves, and anticipated investment income was considered in that determination. If an insurer were to elect to change its consideration of investment income from one year to the next for the purposes of calculating the premium deficiency reserve, that change would likely need to be disclosed, along with the amount of the impact, in the Note called "Accounting Changes and Correction of Errors."

*Discounting of Liabilities for Unpaid Loss and Loss Adjustment Expenses*

This note indicates whether a company discounts loss reserves, and if so, it also describes the basis for calculating the amount of the discount. There are two types of discounting that need to be disclosed: tabular discounting and non-tabular discounting.

Tabular discounting applies specifically to outstanding annuity-type claims that pay pension benefits. These claims arise most commonly from workers' compensation coverage but may also arise from other types of liability coverage. A tabular discount reflects mortality assumptions according to a specific life table and a defined interest rate. Both the life table and the interest rates may be specified by the state

regulator. Not all insurance companies that have these eligible liabilities choose to utilize tabular discounts.

In the first part of this note, the company needs to indicate whether any liabilities are discounted using tabular discounting. If any tabular discounting is used, the company also needs to indicate the basis and assumptions used in calculating the tabular discount. For instance, in the 2018 Fictitious Notes, the company disclosed that tabular workers' compensation case reserves were discounted under various state laws, reflected a discount rate of 3.5% or a rate prescribed by the state regulator, and were derived based on a defined set of U.S. life tables.

In the second part of this note, any non-tabular discounting needs to be disclosed and described. This should reconcile to the amount of the non-tabular discount that was disclosed in Schedule P, Part 1, columns 32 and 33. Non-tabular discounting is less common than tabular discounting and is typically only done in specific cases where a company has been permitted by its state regulator to discount a specific type of liability. Two lines of business most commonly used for non-tabular discounting are workers' compensation and medical professional liability.

While tabular discounts are calculated for specific pension claims, non-tabular discounts are typically calculated on the aggregate amount of a specific segment of reserves by using a projected payment pattern and an assumed discount rate. If a company applies any non-tabular discounting, they must disclose that and describe the basis in this note. We can see from the 2018 Fictitious Notes that the company did not apply non-tabular discounting.

The note also requires a company to disclose whether any of the key assumptions used to discount loss reserves (whether for tabular or non-tabular discounting) have changed relative to the prior year.

It is important for actuaries and other users of the financial statement to be familiar with this note because different companies have different discounting policies, and those differences must be considered to make a consistent comparison. Non-tabular discounts may be of particular interest because they usually exist due to a specific exception granted by the regulator, which may relate to the solvency of an insurer. Furthermore, an actuary that is opining on the loss reserves of a company must disclose and describe any discounting of loss reserves in the SAO.

*Asbestos/Environmental Reserves*

Asbestos and environmental liability reserves have developed adversely over the past several decades. Therefore, exposure to asbestos or environmental liabilities can represent a significant source of uncertainty in a company's loss and LAE reserves. Furthermore, asbestos and environmental liabilities have consistently developed adversely over the past several decades. For these reasons, specific qualitative and quantitative disclosure is required regarding a company's asbestos and environmental reserves.

This note requires a company to disclose whether it has identified a potential exposure to asbestos or environmental reserves. These disclosures specifically exclude exposures relating to policies that were issued specifically to cover asbestos and environmental exposure. If the company answers affirmatively for either asbestos or environmental exposures, it must disclose the lines of business affected, the nature of the exposures and the reserving methodology used to estimate the liability. In addition to those qualitative disclosures, the company must complete a table that provides the following information for each of the past five years:

- Beginning reserves (including case, bulk + IBNR Loss & LAE)
- Incurred loss and LAE
- Calendar year payments for losses and LAE
- Ending reserves (including case, bulk + IBNR Loss & LAE)

This information must be provided separately for asbestos and environmental reserves on a direct, assumed and net of reinsurance basis. The company must also disclose the amount of the reserves that relate to unreported claims (i.e., pure incurred but not reported (IBNR)).

This note is important to the users of the financial statements because it discloses the existence of asbestos and environmental exposure, the magnitude of that exposure and the recent development of that exposure. In cases where these liabilities are material relative to a company's overall reserves and/or have consistently been developing adversely, it should serve as a potential warning sign to the financial health of the company.

Actuaries at insurance companies are often directly involved in the estimation, monitoring and reporting of asbestos and environmental reserves. In situations where the financial statements of a company are under financial review, actuaries may also be in the best position to evaluate the disclosures made here for potential impact on the financial health of the company.

In the 2018 Fictitious Notes, the company acknowledged exposure related to asbestos and environmental liabilities. The company then described its process for identifying, monitoring and estimating these exposures.

The excerpt below in Table 6 shows an example of the five-year history of the calendar year incurred and paid asbestos losses and LAE on a net of reinsurance basis for Fictitious. In this case, we see that the net asbestos liability as of December 31, 2018, was $3.28 million. We also see that there was adverse development in Fictitious' asbestos reserves from 2015 through 2018, as evidenced by the incurred losses and LAE each year.

TABLE 6

| Net of Ceded Reinsurance — Asbestos | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| a. Beginning reserves (including Case; Bulk + IBNR Loss & LAE) | $5,450,000 | $5,023,000 | $3,920,000 | $3,709,000 | $3,426,000 |

| | | | | | |
|---|---|---|---|---|---|
| b. Incurred losses and LAE | — | $49,000 | $249,000 | $188,000 | $236,000 |
| c. Calendar-year payments for losses and LAE | $427,000 | $1,153,000 | $459,000 | $471,000 | $382,000 |
| d. Ending reserves (including Case, Bulk + IBNR Loss & LAE) | $5,023,000 | $3,919,000 | $3,710,000 | $3,426,000 | $3,280,000 |

The excerpt below in Table 7 includes the information on the portion of these reserves that relates to unreported claims.

TABLE 7

| **Ending Loss and LAE Reserves for Unreported Claims Included in Part A Above** | |
|---|---|
| 1. Direct basis | $3,116,000 |
| 2. Assumed reinsurance basis | $0 |
| 3. Net of ceded reinsurance basis | $2,782,000 |

From Tables 6 and 7 we see that $2.78 million out of the total $3.28 million in asbestos reserves (85%) related to unreported claims. The majority of the liability that is related to unreported claims underscores the high level of uncertainty in these liabilities.

NOTES THAT MAY BE POTENTIALLY RELEVANT TO ACTUARIES

In addition to the five notes described above, there are several other notes that may be potentially relevant to actuaries. Actuaries should be familiar with these notes and their significance, and they may need to review them when they are evaluating the reserves for a company (particularly if they are the opining actuary).

*Summary of Significant Accounting Policies and Going Concern*

This note describes the accounting rules used to produce the Annual Statement, including:

- The source of the accounting rules (typically the NAIC *Accounting Practices and Procedures Manual*)
- Any exceptions that were made in applying those rules and the basis for those exceptions, such as an exception that made with specific state approval
- Additional detail on the company's significant accounting policies

Where exceptions are made to the rules in the NAIC *Accounting Practices and Procedures Manual*, they must be either prescribed or permitted by the domiciliary state. "Prescribed" refers to practices that are required by state law, and "permitted" refers to approval by the state regulator.

An actuary who is evaluating the reserves of a company will want to review this note to identify prescribed or permitted practices or other accounting policies that relate to loss reserves. Any unexpected deviations described in this note should be evaluated for their impact on the reserves and general financial health of the insurance company.

The following provides an excerpt of this note as provided in the 2018 Annual Statement for Fictitious:

> 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND GOING CONCERN
>
> A. Fictitious Insurance Company prepares its statutory financial statements in conformity with accounting practices prescribed or permitted by the state of Florida. The state of Florida requires that insurance companies domiciled in Florida prepare their statutory basis financial statements in accordance with the National Association of Insurance Commissioners (NAIC) Accounting Practices and Procedures Manual, subject to any deviations prescribed or permitted by the Florida Insurance Commissioner. The impact of any permitted accounting practices on policyholder surplus of the Company is not material.

As shown in this excerpt, the company prepared its statutory financial statements in conformity with the practices prescribed or permitted by the State of Florida and with the NAIC *Accounting Practices and Procedures Manual*, subject to deviations prescribed or permitted by the Florida Insurance Commissioner. Further, the note indicates that the impact of any permitted practices on policyholder surplus was not material.

*Events Subsequent*

Subsequent events are broadly defined as events that occur between the date of the financial statements (for instance, December 31) and the date that the financial statements are issued (for instance, March 1). Within the broad category of subsequent events, there are also two specific types that should be defined:

- Type 1 (Recognized Subsequent Events) subsequent events provide “additional evidence with respect to conditions that existed as of the date of the Balance Sheet.” An example of this type of information would be if updated information was received on a large claim on January 15, when that claim had already been reported and known of prior to December 31, and the company deemed that insufficient IBNR was carried to cover the additional needed reserve.
- Type 2 (Nonrecognized Subsequent Events) subsequent events provide “evidence with respect to conditions that did not exist at the time of the Balance Sheet.” An example of a Type 2 subsequent event would be if a new large claim occurred on January 15 and was not previously known.

Type 1 subsequent events should already be reflected in the recorded amounts of the financial statements because the financial statements should reflect all information that is known up until the

day that the financial statements are issued relating to the conditions that existed as of the accounting date. Disclosure is not needed unless it is "necessary to keep the financial statements from being misleading." For example, if the booked reserves could not be adjusted in time to incorporate the revised reserve amount necessary to reflect the Type 1 event, this note would disclose the amount by which the reserves need to be adjusted. Note that changes that are made to reserves due to their normal continual review are not considered Type 1 events.

Type 2 subsequent events are not already, and should not be, reflected in the financial statement. However, they should be described in this note if they "may have a material effect on the financial condition of the company." The guidance says "may have," which means that even if a company has determined that the impact is not material, it should still be disclosed as long as it "may have" a material impact. Type 2 subsequent event disclosure, of course, requires use of management's judgment.

An actuary or other user of the financial statement may consider reviewing this note to verify whether there are any material subsequent events that are not reflected in the financial statements. This is of specific importance to an actuary that is opining on a company's loss reserves because the opining actuary will need to determine whether a subsequent event is material to the estimate of the loss reserves and whether that subsequent event should be considered.

Review of the 2018 Fictitious Notes indicates that no subsequent events were disclosed.

*Intercompany Pooling Arrangements*

Intercompany pooling is a common arrangement among companies in a group in which each of the participants fully cedes all of its business to the pool leader, and then each participant assumes back a specific percentage of the total.

In these situations, it is important for a regulator or any other user of the financial statements to understand the pooling arrangement to assess the solvency of the group as a whole. This note discloses the existence of the pooling arrangement and also describes the cessions and assumptions that occur. Typically, this includes identification of each company in the group, the lead company and the pooling percentages for each participant.

In cases where pooling exists, it will affect the various aspects of the Annual Statement in different ways. Some examples include the following:

- The Underwriting and Investment Exhibit will show direct business written by each company and the amounts ceded to the lead company in the pool and the portion of the pool assumed specifically by affiliates.

- Schedule F will show the cessions to the lead company as ceded reinsurance in Part 3 and the assumed business in Part 1.
- Schedule P will show only the pool member's share of the pooled results.

The 2018 Fictitious Notes indicate that this company did not participate in any intercompany pooling.

*Structured Settlements*

A structured settlement refers to a situation where an insurance company settles a claim by purchasing an annuity on behalf of a claimant. This is most commonly observed on workers' compensation or general liability claims, and the annuity is usually purchased from a life insurance company.

When the annuity is purchased (and the claimant is the payee), it is recorded as a paid loss by the original insurance company, and the claim is considered to be closed. However, if the life insurance company providing the annuity was ever to become insolvent, it is possible that the original insurer could still be liable for the remaining portion of the annuity payments.

The purpose of this note is to disclose the total amount of structured settlement payments for which an insurer could be held liable. Furthermore, if the amount of these remaining payments from a single life insurance company exceeds 1% of surplus, specific disclosure of the amount and the company from which the structured settlement was purchased is required.

This note is relevant to users of the financial statements because it describes a potential liability, or credit risk, that is not reflected on the balance sheet. The identification of life insurers that provide coverage for remaining payments exceeding 1% of surplus allows for further review of their financial condition to identify any significant issues.

Review of this note in the 2018 Fictitious Notes indicates that in total the company purchased structured settlements with a statement value of $4.3 million.

*High Deductibles*

High-deductible policies are commercial insurance policies that have a significant deductible, such as $250,000, giving the insured a substantial retention on each claim. Under these high-deductible policies, the insurer pays the full amount of the claim and then seeks reimbursement from the insured for the portion within the deductible. These types of policies are most commonly seen in workers' compensation but also may be used for liability business. Similar to the situation with structured settlements, these policies can present a credit risk to the insurer that is not apparent in the financial statements. For unpaid claims, the portion of the unpaid amount within the deductible is not included within the insurance company's booked loss reserve in the Annual Statement. The treatment for both paid and unpaid deductible losses creates a credit risk for the insurer due to the possibility that the insured will not reimburse them for the deductible portion of the loss.

This note requires disclosure of the following:

- The amount of reserve credit (i.e., the amount of case reserves established for the deductible portion of a loss) recorded by the company for unpaid claims.
- The amount of billed but not yet collected deductible reimbursements for paid claims.

To understand the potential impact of this credit risk, an actuary or other user of the financial statements who is reviewing the financial health of a company can consider the total amount of credit risk relative to the total unpaid claims and to the company's surplus.

As noted in the Notes to Financial Statements for Fictitious, Fictitious does not issue any policies with high deductible plans.

SUMMARY

Notes to financial statements provide additional qualitative and quantitative disclosure to support the numerical information provided in the statutory financial statements. The Notes provide additional detail to assist the user of the financial statement in understanding the numerical exhibits and provide a source of publicly available information on off-balance sheet items.

## CHAPTER 11. GENERAL INTERROGATORIES

In the previous chapter we discussed the Notes to Financial Statements. These notes provide additional information at the end of the financial statements in the interest of full disclosure of a company's financial condition. The notes address accounting policy and provide explanatory data and supplemental information to the financial statements. They assist the reader in interpreting some of the more complex items within a company's financial statements by expanding upon and adding clarity to specific items contained in the balance sheet and income statement. In contrast, the General Interrogatories are a series of questions within the statutory Annual Statement to which the insurance company is required to respond. The questions are divided into two parts:

- Part 1, Common Interrogatories, provides general questions applicable to life, health and property/casualty insurers.
- Part 2 provides questions that are specific to the type of insurance company (e.g., life, health or property/casualty). In the Property/Casualty Annual Statement, this section is Property & Casualty Interrogatories.

Similar to the Notes to Financial Statements, the responses provided in the General Interrogatories provide additional clarity to the reader of the Annual Statement but also serve to identify additional areas that warrant closer review by regulatory officials.

COMMON INTERROGATORIES

Part 1 contains of the following subheadings: General, Board of Directors, Financial, Investment and Other. The purpose of each section is to give the reader an understanding of the company's operations, business practices, and the types of internal and external controls in place.

*General*

The General subsection asks questions pertaining to the following topics:

- Holding company relationships
- Latest regulatory financial examinations
- Excessive sales commission levels
- Merger activity
- Suspension of licenses
- Foreign control
- Exemptions from required regulations
- Whether senior management is subject to a code of ethics

Answers to these questions provide the reader with additional information about the company and its discipline in following the "rules." For example, if a company has suspended licenses or does not comply with recommendations from the latest financial examinations, there may be a lack of internal discipline, and this company would therefore be looked at with further scrutiny by external parties. Likewise, further inquiry may be appropriate if a company reports excessive commission levels, as this might be a sign that the company is conceding on commission to maintain business or achieve growth.

The General subsection also provides the name and address of the independent certified public accountant (CPA) or accounting firm (the auditor) conducting the annual audit and the appointed actuary.

While important to peruse all the interrogatories, knowledge of the auditor, appointed actuary and latest financial exam(s) are of particular relevance to the property/casualty actuary.

Audit firm: The CPA opines as to whether the insurance company's financial statements are free of material misstatement and prepared in accordance with the accounting principles used. The audit firm is responsible for reconciling figures contained in a company's financial statements to detailed underlying balances and confirming amounts due to or from third parties.

It is important for the actuary to be aware of any misstatements in the financial statements or errors in the underlying data relied upon. Further, in accordance with National Association of Insurance Commissioners (NAIC) data testing requirements,[25] a company's independent accountant and appointed actuary are required to communicate so the accountant can determine which data relied upon by the actuary should be subject to audit testing procedures.

Actuary: The name, address and affiliation of the appointed actuary are provided in the General Interrogatories. The appointed actuary is the actuary explicitly appointed by the insurance company's board of directors, or equivalent body, to opine on the loss and loss adjustment expense (LAE) reserves reported in the company's Annual Statement. It is important for the user of the Annual Statement to know who the appointed actuary is; questions pertaining to the Statement of Actuarial Opinion should be addressed to the appointed actuary.

Latest financial examination: The General Interrogatories also provide information regarding the latest financial examination performed by state regulatory officials. The interrogatories include:

- The date of the latest financial exam
- The date through which financial statements were evaluated
- The release date of the examiner's report
- The name of the department performing the exam

[25] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 19.

- Whether the insurance company has complied with all adjustments and recommendations from the examination report

Regulatory examination reports are generally available to the public through the state insurance department in which the exam was performed. The examination report will provide the state's findings with respect to the adequacy of the company's loss and LAE reserves.

*Board of Directors*

The Board of Directors subsection of the Common Interrogatories focuses on the board's role in overseeing the company's operations. In particular, it includes questions regarding the board's approval of the purchase or sale of investments and whether the company has a process in place to notify the board of conflicts of interest within the company's senior management. The company is also asked whether permanent records of board proceedings are retained; this enables tracking and monitoring of the board's oversight role.

*Financial*

While it is generally assumed that the Annual Statement is prepared in conformity with Statutory Accounting Principles (SAP), the first question within the Financial subsection asks if the statement was prepared using another basis (e.g., Generally Accepted Accounting Principles). The basis of accounting is important for users of the statement and should probably be read first when opening an Annual Statement. If it is assumed that the Annual Statement is prepared in conformity with SAP, but it is prepared using a different accounting basis, then the user may misinterpret individual figures and ultimately a company's financial position.

The questions within the remainder of the Financial subsection pertain to loans made to senior leadership and other stakeholders of the company, assets that the company was obliged to transfer to another party that were not reported as a liability in the statement, assessments other than those to a guaranty fund or guaranty association, and amounts due from affiliates. The purpose is to understand if the company has financial obligations that have not previously been reported in the Annual Statement and/or if the company is providing financial support or a lifeline to stakeholders or affiliates.

*Investment*

The Investment subsection has the most questions within the General Interrogatories (more than 30). They cover control over assets and investment decisions, security lending programs and associated collateral, hedging programs, mandatorily convertible preferred stocks or bonds, and compliance with the *Purposes and Procedures Manual* of the NAIC Securities Valuation Office, among other topics. Here again, the questions pertain to the level of control the company has over its operations and compliance with the rules.

*Other*

*The Other* subsection captures information about payments made to trade associations, service organizations, statistical or rating bureaus, attorneys or others in connection with legislative or regulatory matters. Examples of such organizations include the Insurance Services Office and A.M. Best Company. The company is required to list the names of organizations where payment exceeded 25% of the subtotal so that the reader can get an idea of the amount of influence or reliance that the company has on a particular organization, bureau or legislative matter.

PROPERTY & CASUALTY INTERROGATORIES

Part 2 of the General Interrogatories is specific to property/casualty insurers and provides more details about the company's exposures that are not readily determinable based on the quantitative information contained in the schedules and exhibits within the Annual Statement. Many of these questions focus on specific exposures that are not generally dealt with by the property/casualty actuary on a daily basis, such as those pertaining to Medicare supplement insurance, health lines of business or health savings accounts. However, other questions are of major interest to actuaries. For example, certain questions center on the company's exposure to catastrophic events and excessive loss, the process by which probable maximum loss is determined and the level of reinsurance protection afforded to protect the company's net results against catastrophic losses. These questions (requests) include the following:

- "What provision has this reporting entity made to protect itself from an excessive loss in the event of a catastrophe under a workers' compensation contract issued without limit of loss?" [26]
- "Describe the method used to estimate this reporting entity's probable maximum insurance loss, and identify the type of insured exposures comprising that probable maximum loss, the locations of concentrations of those exposures and the external sources (such as consulting firms or computer software models), if any, used in the estimation process." [27]
- "What provision has this reporting entity made (such as a catastrophic reinsurance program) to protect itself from an excessive loss arising from the types and concentrations of insured exposures comprising its probable maximum property insurance loss?" [28]
- "Does the reporting entity carry catastrophe reinsurance protection for at least one reinstatement, in an amount sufficient to cover its estimated probable maximum loss attributable to a single loss event or occurrence?" [29]

[26] *2018 Property/Casualty Annual Statement*, General Interrogatory 6.1 (Part 2 Property & Casualty Interrogatories).
[27] Ibid., General Interrogatory 6.2 (Part 2 Property & Casualty Interrogatories).
[28] Ibid., General Interrogatory 6.3 (Part 2 Property & Casualty Interrogatories).
[29] Ibid., General Interrogatory 6.4 (Part 2 Property & Casualty Interrogatories).

- "If no, describe any arrangements or mechanisms employed by the reporting entity to supplement its catastrophe reinsurance program or to hedge its exposure to unreinsured catastrophic loss." [30]

Although the General Interrogatories are not included for Fictitious Insurance Company, the aforementioned questions would be of particular interest to users of Fictitious' Annual Statement in light of the company's catastrophic loss experience in 2018. Review of answers to the above questions in conjunction with the information provided in Schedules F and P about Fictitious' reinsurers and ceded loss ratios would assist the user in evaluating the adequacy of Fictitious' reinsurance protection relative to its catastrophe exposures. Other questions within the Property & Casualty Interrogatories that are of interest include those pertaining to the use of finite reinsurance. Finite reinsurance was a hot topic in the property/casualty insurance industry in 2005 when several large insurance companies were fined by the Securities and Exchange Commission for accounting for finite reinsurance deals in a way to bolster their financial position.

In its simplest form, finite reinsurance does not transfer underwriting risk; rather it is a play on interest. Assume an insurance company knows it will have to pay a fixed amount in losses, say $10 million, in two years. Under a finite reinsurance deal, the insurance company could take the present value of $10 million and give it to a reinsurance company as "premium," in exchange for an agreement that the reinsurer pay the $10 million in losses two years from now. The amount the reinsurer will have to pay is fixed ($10 million), and the time the reinsurer will have to pay the losses is fixed (two years); there is no underwriting or timing risk involved in the transaction.

Using a simplified example, assuming a 5% rate of interest, if the insurance company were to account for this contract as reinsurance, its balance sheet would show a reduction of approximately $9 million in cash for premium paid (the present value of $10 million at 5% interest per year for two years) in return for a corresponding reduction of $10 million in loss reserves, resulting in a net increase to surplus of approximately $1 million. However, since there is no underwriting or timing risk, this is more akin to a deposit, such as one with a bank, and this is how such contracts must be accounted for. There is no surplus relief as a result of this contract; the insurer still has to pay $10 million in two years.

Several high-profile insurance companies engaged in finite reinsurance arrangements in the early 2000s to boost their financial results through improper accounting. This behavior prompted the NAIC to adopt additional disclosure requirements, including an expansion of the Property & Casualty Interrogatories. One such interrogatory requires insurers to answer affirmatively if they ceded reinsurance that:

1. Resulted in underwriting gain (or loss) of more than 5% of prior year surplus or ceded premiums or loss and LAE reserves of more than 5% of surplus.
2. Was accounted for as reinsurance rather than as a deposit.

[30] Ibid., General Interrogatory 6.5 (Part 2 Property & Casualty Interrogatories).

3. Had one or more of the following features ("or other features that would have similar results"[31]):
    a. Duration of at least two years and is non-cancelable during the term.
    b. Limited cancellation provisions such that the ceding company is required to enter into a new contract with the same reinsurer or its affiliate.
    c. Aggregate stop loss coverage.
    d. The right by either party to commute, unless triggered by a downgrade in the credit rating of the other party.
    e. The ability to report or pay losses less frequently than quarterly.
    f. Delayed timing of reimbursement to the ceding company.[32]

A following interrogatory requires insurers to answer affirmatively if they have entered any ceded reinsurance contracts where ceded premium is 50% or more than the insurer's gross written premium, or 25% or more of the ceded written premium is retroceded to the insurer. Reinsurance ceded to entities other than captives under the insurer's control or approved pooling arrangements is excluded from this interrogatory.[33]

If either interrogatory is answered affirmatively by the insurance company, the insurer is required to file the Reinsurance Summary Supplemental Filing to the Annual Statement. This filing is due on March 1. Within this filing the insurer is required to disclose:

1. The financial impact on the balance sheet and statement of income if such contracts were excluded (i.e., the restatement of assets, liabilities, surplus and net income gross of the reinsurance contract(s)).
2. A summary of the applicable terms of the contract(s) that triggered the affirmative response.
3. The reasons management entered into the contract, including the expected financial gain.[34]

The intent of these additional interrogatories and the supplemental filing is to identify those contracts that may be accounted for improperly and therefore warrant further review by regulatory officials. Knowledge of such contracts is relevant to the actuary as the accounting treatment may impact the actuary's evaluation of unpaid claims. If a ceded contract is accounted for as reinsurance, it will serve to reduce the unpaid claim liabilities; if accounted for as a deposit, it will not.

Examples of other items addressed within the Property & Casualty Interrogatories that tend to be a focus of the actuary include:

[31] Ibid., General Interrogatory 9.1 (Part 2 Property & Casualty Interrogatories).
[32] Ibid., General Interrogatory 9.1 (Part 2 Property & Casualty Interrogatories).
[33] Ibid., General Interrogatory 9.2 (Part 2 Property & Casualty Interrogatories).
[34] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 440.

- Whether there are specific limiting provisions within reinsurance contracts, guaranteed policies and retrospectively rated policies, as these features may affect the actuary's evaluation of unpaid claims.[35]
- Any releases of liability under reinsured policies, such that the company could reassume liability and potentially have its surplus position weakened as a result.[36]
- Exposure to warranty business, whereby the adequacy of the unearned premium reserve would be the focus of attention as the contract terms, and therefore exposure, tends to continue beyond 12 months.[37]

[35] 2018 *Property/Casualty Annual Statement*, General Interrogatory 7.1 (Part 2 Property & Casualty Interrogatories).
[36] Ibid., General Interrogatory 8.1 (Part 2 Property & Casualty Interrogatories).
[37] Ibid., General Interrogatory 16.1 (Part 2 Property & Casualty Interrogatories).

## CHAPTER 12. FIVE-YEAR HISTORICAL DATA EXHIBIT

OVERVIEW

Most other exhibits and schedules within the Annual Statement provide only one or two years of financial data for a company. The Five-Year Historical Data exhibit is valuable because it provides a summarization of key financial figures and statistics from historical Annual Statements going back five years: the current and prior four. Key line items from the balance sheet and income statement are included. Also included are operating ratios and ratios showing one- and two-year development in loss reserves relative to policyholders' surplus. This compilation facilitates the identification of trends when evaluating the health of a property/casualty insurance company.

Following is a brief overview of content that actuaries tend to focus on within this exhibit, with illustrations using data from Fictitious' 2018 Annual Statement where deemed relevant.

WRITTEN PREMIUM

The first page of the Five-Year Historical Data exhibit begins with the insurance company's revenue. For an insurance company, revenue is in the form of written premium. Gross and net written premium information is provided. Gross and net amounts are summarized into the following five lines of business categories:

1. Liability
2. Property
3. Property and liability combined
4. All other
5. Non-proportional reinsurance

A sixth line contains the totals.

This information shows how the company's premium volume, use of reinsurance and business mix have changed over time. Things to look out for when assessing the health of an insurance company include rapid growth or decline in revenue, increases or decreases in the use of reinsurance protection, and changes in business mix toward riskier or unprofitable lines. Observations such as these would prompt additional inquiry through review of other schedules, exhibits and notes within the Annual Statement and a meeting with company management. For example, if a company significantly increased its use of ceded reinsurance, we would want to understand the quality of the reinsurance. The Notes to Financial Statements and Schedule F provide additional information on the company's reinsurers.

Total gross and net written premium figures from Fictitious' Five-Year Historical Data exhibit are displayed in Table 8.

TABLE 8

| Data from Fictitious Insurance Company 2018 Five-Year Historical Data (USD) | | | | | |
|---|---|---|---|---|---|
| | **2018** | **2017** | **2016** | **2015** | **2014** |
| 6. Gross premiums written | 28,634,000 | 28,085,000 | 29,519,000 | 31,238,000 | 31,670,000 |
| | 2% | -5% | -6% | -1% | |
| 12. Net premiums written | 26,752,000 | 25,936,000 | 25,521,000 | 25,583,000 | 25,363,000 |
| | 3% | 2% | 0% | 1% | |
| Net/gross ratio | 93% | 92% | 86% | 82% | 80% |

Fictitious experienced an approximate 5% decline in gross writings in 2016 and 2017. This could have been attributed to many things, including a decrease in concentration in a certain line of business or risk class, the continued softening of the market observed over this time period or a decrease in the amount of coverage purchased. Gross written premiums increased by 2% in 2018, which again could have been a function of the economy or insurance prices starting to rebound or both.

Over the same period, net written premium volume was relatively flat and even slightly positive. Calculation of the net-to-gross ratio shows that the company's net retention had been growing since 2014, from 80% in 2014 to 93% in 2018. This means that the company was ceding fewer premium dollars to its reinsurers. This could have been attributed to either a decision by the company to retain more business or a softening in reinsurance prices over the period or both. Observations such as these would warrant further inquiry of company management to fully understand the cause for changes in the company's direct, assumed and ceded business volume.

Table 9 shows the gross written premium figures by line of business segment as reported by Fictitious, below which the corresponding distribution of gross written premium by segment is shown.

TABLE 9

| Data from Fictitious Insurance Company 2018 Five-Year Historical Data (USD) | | | | | |
|---|---|---|---|---|---|
| **Gross premiums written (GPW)** | **2018** | **2017** | **2016** | **2015** | **2014** |
| 1. Liability lines | 13,281,000 | 13,843,000 | 15,075,000 | 16,422,000 | 16,815,000 |
| 2. Property lines | 5,566,000 | 4,990,000 | 5,436,000 | 5,925,000 | 6,155,000 |
| 3. Property and liability lines | 9,649,000 | 8,936,000 | 8,651,000 | 8,544,000 | 8,355,000 |
| 4. All other lines | 138,000 | 316,000 | 357,000 | 347,000 | 345,000 |
| 5. Non-proportional reinsurance lines | – | – | – | – | – |
| **6. Total** | **28,634,000** | **28,085,000** | **29,519,000** | **31,238,000** | **31,670,000** |
| Distribution of GPW | **2018** | **2017** | **2016** | **2015** | **2014** |
| Liability lines | 46% | 49% | 51% | 53% | 53% |
| Property lines | 19% | 18% | 18% | 19% | 19% |
| Property and liability lines | 34% | 32% | 29% | 27% | 26% |
| All other lines | 0% | 1% | 1% | 1% | 1% |
| Non-proportional reinsurance lines | 0% | 0% | 0% | 0% | 0% |
| **Total** | **100%** | **100%** | **100%** | **100%** | **100%** |

For Fictitious, the lines of business flowing into the segments identified in Table 9 are as follows:[38]

1. Liability lines: workers' compensation, other liability and automobile liability
2. Property lines: fire and auto physical damage
3. Property and liability lines: homeowners and commercial multiple peril
4. All other lines: fidelity

Fictitious does not write any non-proportional reinsurance (line 5).

Over the five-year period ending in 2018, Fictitious' writings declined in the liability lines (line 1) and grew in the property and liability lines (line 3). Writings in the straight property lines (line 2) remained consistent over the period.

Property lines tend to be short-tailed in nature; property claims are reported and paid relatively quickly when compared to liability claims. Shifts from liability to property lines would tend to result in a reduction in uncertainty surrounding the company's loss and loss adjustment expense (LAE) reserves. However, shifts to the property lines increase uncertainty due to the exposure to catastrophe loss.

A similar analysis can be performed on Fictitious' net written premium data.

[38] Written premium by line of business is shown in Part 1B, Premiums Written, of the U&IE.

## STATEMENT OF INCOME

The Five-Year Historical Data exhibit also provides summarized information from the Statement of Income that is useful in identifying components of changes in a company's net income (e.g., whether attributed to underwriting or investments or other income). Table 10 shows this data for Fictitious.

TABLE 10

| Data from Fictitious Insurance Company 2018 Five-Year Historical Data (USD) | | | | | |
|---|---|---|---|---|---|
| **Statement of Income** | **2018** | **2017** | **2016** | **2015** | **2014** |
| 13. Net underwriting gain (loss) | (2,133,000) | 1,488,000 | 2,544,000 | 1,883,000 | 2,773,000 |
| 14. Net investment gain (loss) | 4,305,000 | 4,415,000 | 2,850,000 | 3,993,000 | 4,747,000 |
| 15. Total other income | 33,000 | 47,000 | 38,000 | 143,000 | 47,000 |
| 16. Dividends to policyholders | 46,000 | 32,000 | 23,000 | 29,000 | 31,000 |
| 17. Federal and foreign income taxes incurred | (20,000) | 963,000 | 1,489,000 | 1,378,000 | 1,304,000 |
| 18. Net income | 2,179,000 | 4,955,000 | 3,920,000 | 4,612,000 | 6,232,000 |
| Increase/(decrease) year-over-year | (2,776,000) | 1,035,000 | (692,000) | (1,620,000) | |
| Percentage increase/(decrease) year-over-year | -56% | 26% | -15% | -26% | |

We see that Fictitious' net income was been positive in each of the years 2014 through 2018, with growth achieved in 2017 over 2016 after two years of decline. The $1 million (+26%) growth observed in 2017 was predominantly attributed to improvements in the financial markets and a reduction in taxes. Investment gains improved in 2017

Despite relatively strong return on investments in 2018, Fictitious experienced a 56% decline in net income in 2018 over 2017 due to a net underwriting loss of $2 million. Given what we know about the company's shift toward property lines over the period 2014 through 2018, and consequential increase in exposure to catastrophe losses, we can hypothesize that the underwriting loss in 2018 was due to the high frequency of catastrophe events during the year. Investigation of other statements and exhibits within Fictitious' Annual Statement can help us validate our theory.

As discussed in Chapter 8. *The Statutory Income Statement: Income and Changes to Surplus*, the Statement of Income on page 4 of the Annual Statement provides the components of net underwriting gain (loss), net investment income gain (loss) and other income, and each component can be further investigated through various supporting schedules. For example, as displayed in the Statement of Income for Fictitious, the net underwriting loss of $2 million was primarily driven by an increase in losses incurred during 2018 ($17 million in 2018 versus $13 million in 2017, per line 2 of the Statement of Income).

We can drill down further by looking at the one-year development line (Development in estimated losses and loss expenses incurred prior to current year) within the five-year exhibit to see whether this increase was attributed to prior-year development or current-year incurred losses.

TABLE 11

| Data from Fictitious Insurance Company 2018 Five-Year Historical Data (USD in 000s) | | | | | |
|---|---|---|---|---|---|
| | **2018** | **2017** | **2016** | **2015** | **2014** |
| 73. Development in estimated losses and loss expenses incurred prior to current year (Schedule P, Part 2, Summary, Line 12, Column 11) | (875) | (1,354) | (1,618) | (1,959) | (918) |

As displayed in the one-year development line, loss and defense and cost containment (DCC) development in 2018 on prior accident years was *negative* $875,000.[39] This means that the company experienced favorable development in 2018 on the prior years in the aggregate. As a result, the underwriting loss in 2018 must have been due to current (2018) accident year incurreds, providing further evidence that catastrophes were the cause. A review of accident year 2018 loss and DCC experience per Schedule P can confirm this.

Turning to Schedule P, Part 2, Summary, we see that accident year 2018 incurred loss and DCC was $19 million, approximately $3 million higher than it had been in the company's 10-year history. Later in Schedule P, the line of business detail shows that the company experienced higher incurred loss and DCC on the homeowners/farmowners line (roughly $4 million on accident year 2018 versus $2.5 million on accident year 2017). This further suggests that Fictitious, like the rest of the insurance industry, was adversely impacted by the natural catastrophes in 2018. However, Fictitious appeared to have been relatively unscathed by the 2017 catastrophes. A review of Fictitious' mix of business by and within affected state(s) and discussions with management might help explain why Fictitious was not as impacted as the rest of the industry by catastrophes in 2017.

With respect to investment gains in 2017, a line-by-line comparison of the Exhibit of Net Investment Income within the company's current-year and prior-year Annual Statements can provide further details on changes in the company's investment income, as can a line-by-line comparison of changes in amounts by asset class within the Exhibit of Capital Gains (Losses). While these two exhibits are not included in the Annual Statement excerpts provided for Fictitious, a study of the changes in net investment income can be made by reviewing these exhibits for one of the (real) insurance companies on the CAS Exam 6 U.S. Syllabus.

Absent these exhibits for Fictitious, we expect that the growth in investment income in 2017 was most likely due to a rebound in the financial markets post crisis.

As displayed in the Five-Year Historical Data exhibit for Fictitious, the decline in taxes in 2018 is directionally consistent with what one would expect with a decline in income. We also expect the

[39] We acknowledge that Schedule P, Part 2, Summary, provides both loss and DCC, while we are focusing on the change in incurred losses only. However, as shown in the Statement of Income, loss adjustment expenses have not changed significantly in dollar terms. We therefore feel this comparison is reasonable for illustration purposes.

decline in taxes in 2018 to be in part attributed to the Tax Cuts and Jobs Act of 2017 ("TCJA"), which became effective beginning tax year 2018 and changed key federal tax rules. The changes most significant to property/casualty insurance carriers were related to the corporate tax rate, the loss reserve discounting rules, and the base erosion and anti-abuse tax. Further details on the impact of TCJA on property/casualty insurers are provided in Chapter 26.

However, the decrease in taxes between 2016 and 2017 by approximately $0.5 million (from $1,489,000 to $963,000) is somewhat counterintuitive. Generally, one would expect to pay more taxes the higher the income. While not included in the Annual Statement excerpts provided for Fictitious, the note in the financial statements titled "Income Taxes" (number 9 in the Notes to Financial Statements of the 2018 Annual Statement) can be helpful in explaining movements in taxes from year to year, such as that which occurred for Fictitious. This note provides details on deferred tax assets and losses and shows what taxes would have been if a straight 35% statutory tax rate was used. It also provides the reasons for differences between the total recorded income tax and taxes at the statutory rate, which might in turn explain higher or lower taxes paid in a particular year.

BALANCE SHEET

The balance sheet section of the Five-Year Historical Data exhibit contains summarized information that is useful in identifying components of changes in surplus (e.g., whether attributed to changes in assets or certain liability items) over time.

Only two major asset categories are provided: (1) total admitted assets and (2) premiums and considerations. However, the distribution of assets by class is provided further along in the exhibit (percentage distribution of cash, cash equivalents and invested assets). For trend analysis, the distribution of assets by class is more useful than the actual dollar amounts. When analyzing the health of a property/casualty insurer, things to look out for include large holdings in risky asset classes or changes in mix to riskier classes. However, the user would also look to the company's use of hedging vehicles to mitigate increased holdings in riskier investments, such as derivative instruments (see Chapter 8. *The Statutory Income Statement: Income and Changes to Surplus*).

The remaining lines within the balance sheet section of the exhibit are summarized items from the Liabilities, Surplus and Other Funds page. Of most relevance to the property/casualty actuary is the level of loss and LAE reserves, unearned premiums, and surplus relative to the actuary's knowledge of the underlying business and the changes therein.

A review of Fictitious' data shows no significant changes in these items other than a dip in surplus in 2015 (6% decrease from 2014) and 2017 (12% decrease from 2016). The capital and surplus account within the Statement of Income shows that the large decrease in 2017 was attributed to sizeable dividends paid to stockholders during the year (approximately $10 million). This can also be seen in the Capital and Surplus Account section of the Five-Year Historical Data exhibit. This section provides two

sources of the change in surplus: that due to unrealized capital gains (losses) and that resulting from dividends paid by the company to its stockholders.

RISK-BASED CAPITAL

We will discuss Risk-Based Capital (RBC) in detail in Chapter 19. *Risk-Based Capital*. It is a solvency framework developed by the National Association of Insurance Commissioners from which an amount of regulatory capital is determined formulaically based on the application of specified factors to an insurance company's recorded admitted assets and liabilities as of year-end. The calculated amount of regulatory capital, or RBC, is compared to the total adjusted capital recorded by the insurance company at year-end to determine the level, if any, of company or regulatory action required from a solvency perspective.

The components of the RBC ratio are provided in the Five-Year Historical Data exhibit but not the RBC ratios themselves. However, the user can calculate the RBC ratios from the information provided in the Five-Year Historical Data exhibit. Table 12 provides the figures shown in lines 28 and 29 of Fictitious Insurance Company's 2018 Five-Year Historical Data, below which we show the RBC ratios that we calculated from lines 28 and 29.

TABLE 12

| Data from Fictitious Insurance Company 2018 Five-Year Historical Data (USD) | | | | | |
|---|---|---|---|---|---|
| **Risk-Based Capital analysis** | **2018** | **2017** | **2016** | **2015** | **2014** |
| 28. Total adjusted capital | 31,024,000 | 31,608,000 | 35,793,000 | 32,572,000 | 34,567,000 |
| 29. Authorized control level RBC | 5,588,000 | 6,097,300 | 5,854,000 | 5,685,000 | 6,517,000 |
| Total adjusted capital as a percent of ACL (= Line 28 / Line 29) | 555% | 518% | 611% | 573% | 530% |
| Total adjusted capital as a percent of RBC (= Line 28 / (Line 29*2)) | 278% | 259% | 306% | 286% | 265% |
| Reduction in capital to next RBC level (= Line 28 - (Line 29*2)) | 19,848,000 | 19,413,400 | 24,085,000 | 21,202,000 | 21,533,000 |

Table 98 of this publication provides the various levels of company and/or regulatory action in response to a company's calculated RBC ratios. For Fictitious, the percentage of adjusted capital to authorized control level (ACL) RBC ranged between 518% to 611% over the five-year period 2014 through 2018, which is 2.6 to 3.1 times the first level requiring action (company action level, which is equal to 200% of ACL). This means that Fictitious' capital in 2018 could have been reduced by $20 million before any action was required under the RBC requirements. This was computed by taking the total capital in line 28 and subtracting from it the upper bound of the range of the first action level of RBC requirements (i.e., 200%).[40]

[40] $19.920 million = $31.024 million - (2 * $5.552 million).

In establishing a materiality standard for Statement of Actuarial Opinion purposes, some actuaries look at the impact on surplus from a change in RBC levels. In these circumstances, an increase in reserves by an amount that would cause the company (or regulator) to take action under RBC is thought to be material. This is discussed further in Chapter 16. *Statement of Actuarial Opinion*.

OPERATING PERCENTAGES

Operating percentages provide the distribution of earned premium into its components of loss, LAE, other underwriting expenses and the profit (loss) from underwriting (net underwriting gain (loss)) that remains. For Fictitious, the ratios were reasonably consistent over the five-year period with the exception of 2018. The high loss ratio in 2018 relative to prior years highlights the spike in losses in 2018 and resulting loss from underwriting.

Spikes or changes in other underwriting expenses directly impact profitability and would be investigated further as to whether such costs were necessary and/or indicative of costs to be incurred by the company in the future.

ONE- AND TWO-YEAR LOSS DEVELOPMENT

Actuaries, in particular those that work in the reserving area, pay considerable attention to the last four lines of the Five-Year Historical Data exhibit (lines 73 through 76 of 2018 Five-Year Historical Data exhibit), as this information shows how the company's prior-year loss and DCC reserves have developed over one- and two-year time horizons.

We already presented the one-year development line (line 73) when interpreting the cause of the underwriting loss incurred by the company in 2018. The subsequent line (line 74) shows the relationship of one-year loss and DCC development to the company's surplus as recorded in the prior year's balance sheet. The purpose is to show the impact of adverse or favorable reserve development on policyholders' surplus. That is, it shows the percentage of surplus that would have been absorbed (enhanced) as a result of adverse (favorable) loss development.

In a perfect world, development would be nil. However, loss reserves represent estimates made by a company's management based on information available as of a certain point in time. It is expected that actual loss emergence will differ from expected, and company management will revise its estimates each year as additional information becomes available. As a result, it's not often that $0 is observed in the one-year (or two-year) development line. The issue here is not that a company experiences development in its loss reserves, but rather how big the development is and its significance to surplus.

Stakeholders tend to be concerned when large positive numbers are shown in the development lines as this means that the prior-year reserves were deficient. The question is whether the increase is attributed to an anomaly or if it is symptomatic of a trend of under-reserving. Further investigation could be made within the Annual Statement by reading the Notes to Financial Statements, specifically the note on changes in incurred loss and LAE, and looking at Schedule P, Part 2, which may show that

the adverse development is coming from a particular year or line of business. Oftentimes, such development is also discussed in public reports by and on behalf of the company (e.g., Form 10-K for public companies or the AMB Credit Report for the company published by A.M. Best). However, nothing supplants discussion with company management.

Table 13 provides both the one-year development line and the relationship of one-year development to prior-year surplus (line 74) for Fictitious.

TABLE 13

| Data from Fictitious Insurance Company 2018 Five-Year Historical Data | | | | | |
|---|---|---|---|---|---|
| | **2018** | **2017** | **2016** | **2015** | **2014** |
| 73. Development in estimated losses and loss expenses incurred prior to current year (Schedule P, Part 2, Summary, Line 12, Column 11)*; USD in 000s* | (875) | (1,354) | (1,618) | (1,959) | (918) |
| 74. Percent of development of losses and loss expenses incurred to policyholders' surplus of prior year-end (line 73 divided by Page 4, Line 21, Column 1 x 100) | (2.8) | (3.8) | (5.0) | (5.6) | (2.6) |

During 2018, Fictitious' booked net ultimate loss and DCC reserve estimates on accident years 2017 and prior developed favorably by $0.9 million (line 73). This means that, with the benefit of one year's hindsight, the net loss and DCC reserves recorded by the company as of December 31, 2017, were overstated by $0.9 million. That overstatement represented 3% of the company's surplus as of December 31, 2017 (line 74).

Going back a year, with the benefit of one year's hindsight, recorded net loss and DCC reserves as of December 31, 2016, were overstated by $1.4 million, or 4% of surplus.

We can continue going back and observe development in years 2014 through 2016 on prior-year reserves. For Fictitious, the result was consistent over the five-year period; recorded loss and DCC reserves (or ultimate loss and DCC estimates) developed favorably in the following year. This implies that the company was relatively conservative in establishing its reserve estimates.

While stakeholders and regulators of insurance companies tend to be more concerned when development is adverse, large favorable development also raises an issue with certain parties. For example, the Internal Revenue Service pays close attention to favorable emergence as overstatements in reserves reduce the amount of taxable income. Additionally, investors would be concerned that the company is accumulating funds that could be better invested elsewhere, thereby suppressing the investor's rate of return.

The two-year development lines show similar information as contained in the one-year lines, with the exception that development over a two-year period is provided. For example, Fictitious' recorded net

loss and DCC reserves as of year-end 2016 developed favorably by $2.6 million in 2017 and 2018. This represents 7.3% of surplus recorded at the end of 2016.

TABLE 14

| Data from Fictitious Insurance Company 2018 Five-Year Historical Data | | | | | |
|---|---|---|---|---|---|
| | **2018** | **2017** | **2016** | **2015** | **2014** |
| 75. Development in estimated losses and loss expenses incurred two years before the current year and prior year (Schedule P, Part 2, Summary, Line 12, Column 12); *USD in 000s* | (2,602) | (2,906) | (3,680) | (2,544) | (1,059) |
| 76. Percent of development of losses and loss expenses incurred to policyholders' surplus of second prior year-end (Line 75 divided by Page 4, Line 21, Column 2 x 100) | (7.3) | (8.9) | (10.6) | (7.3) | (3.0) |

This information enables the actuary to see whether the development tends to be isolated to the first year of development or continues to the next. In Fictitious' case, the favorable development continued through year two. For example, one-year development on year-end 2016 reserves developed by $1.4 million in 2017 (line 73) and then another $1.2 million in 2018 (per line 75, computed by taking $2.6 million and subtracting the one-year development of $1.4 million).

## CHAPTER 13. OVERVIEW OF SCHEDULES AND THEIR PURPOSE

OVERVIEW

*Schedules A through E*

The first eight schedules (Schedules A through E) of the Annual Statement provide further transparency of the company's assets, as displayed in the balance sheet of the statutory financial statements. The purpose of these schedules is to assist stakeholders and regulators in identifying and analyzing risks inherent in those assets, changes in those assets and differences in their valuation.

The following outlines the contents of Schedules A through E:

TABLE 15

| Schedule | Part | Title |
|---|---|---|
| A | 1 | Real Estate Owned December 31 of Current Year |
| A | 2 | Real Estate Acquired and Additions Made During the Year |
| A | 3 | Real Estate Disposed During the Year |
| B | 1 | Mortgage Loans Owned December 31 of Current Year |
| B | 2 | Mortgage Loans Acquired and Additions Made During the Year |
| B | 3 | Mortgage Loans Disposed, Transferred or Repaid During the Year |
| BA | 1 | Other Long-Term Invested Assets Owned December 31 of Current Year |
| BA | 2 | Other Long-Term Invested Assets Acquired and Additions Made During the Year |
| BA | 3 | Other Long-Term Invested Assets Disposed, Transferred or Repaid During the Year |
| D | Part 1 | Long-Term Bonds Owned December 31 of Current Year |
| D | Part 2 - Section 1 | Preferred Stocks Owned December 31 of Current Year |
| D | Part 2 - Section 2 | Common Stocks Owned December 31 of Current Year |
| D | Part 3 | Long-Term Bonds and Stocks Acquired During Current Year |
| D | Part 4 | Long-Term Bonds and Stocks Sold, Redeemed or Otherwise Disposed of During Current Year |
| D | Part 5 | Long-Term Bonds and Stocks Acquired During the Year and Fully Disposed of During Current Year |
| D | Part 6 - Section 1 | Valuation of Shares of Subsidiary, Controlled or Affiliated Companies |
| D | Part 6 - Section 2 | Valuation of Shares of Lower Tier Company |
| DA | Part 1 | Short-Term Investments Owned December 31 of Current Year |
| DB | Part A - Section 1 | Options, Caps, Floors, Collars, Swaps and Forwards Open December 31, of Current Year |
| DB | Part A - Section 2 | Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year |
| DB | Part B - Section 1 | Futures Contracts Open December 31 of Current Year |
| DB | Part B - Section 2 | Futures Contracts Terminated During Current Year |
| DB | Part C - Section 1 | Company's positions in replication (synthetic asset) transactions Open December 31 of Current Year |
| DB | Part C - Section 2 | Company's positions in replication (synthetic asset) transactions Terminated During Current Year |
| DB | Part D | Counterparty Exposure for Derivative Instruments Open December 31 of Current Year |
| DL | Part 1 | Securities Lending Collateral Assets (Reinvested Collateral Assets Owned December 31 Current Year) |
| DL | Part 2 | Securities Lending Collateral Assets (Reinvested Collateral Assets Owned December 31 Current Year) |
| E | Part 1 | Cash |
| E | Part 2 | Cash Equivalents |
| E | Part 3 | Special Deposits |

There is considerable information within each schedule, including a description of each asset, its value and the basis for valuation. We do not intend to provide all the details of each asset schedule. As discussed previously, most property/casualty actuaries will not need to have a deep understanding of all of the asset classes on the balance sheet. Therefore, we only provide a brief description of each

schedule and show how the reader can source the items listed in the asset side of the balance sheet (page 2 of the Annual Statement) to these schedules.

While we will present each of Schedules A through E in order of presentation in the Annual Statement, keep in mind the distribution of admitted assets by class for the property/casualty industry as a whole, as was provided in Chapter 7. *Statutory Balance Sheet: A Measure of Solvency*. Table 16 provides a comparison of the distribution for the industry to that of Fictitious Insurance Company as of December 31, 2018.

TABLE 16[41]

**Summary of Net Admitted Assets (column 3) on Page 2 of the Annual Statement**

| Assets | Line Number per Page 2 | Schedule Reference | Property Casualty Industry | Fictitious Insurance Company |
|---|---|---|---|---|
| Investments | | | | |
| Bonds | 1 | D – Part 1 | 50.7% | 58.7% |
| Preferred stocks | 2.1 | D – Part 2 – Section 1 | 0.3% | 0.0% |
| Common stocks | 2.2 | D – Part 2 – Section 2 | 19.2% | 19.3% |
| Mortgage loans | 3.1 + 3.2 | B | 1.0% | 0.2% |
| Real estate | 4.1 + 4.2 + 4.3 | A | 0.7% | 3.8% |
| Cash and short-term investments | 5 | E, DA | 5.0% | 1.0% |
| Contract loans | 6 | | 0.0% | 0.0% |
| Derivatives | 7 | DB | 0.0% | 0.0% |
| Other investments | 8 + 9 + 10 + 11 | BA, DL | 6.7% | 4.7% |
| **Total cash and investments** | **12** | | **84.1%** | **87.8%** |
| **Total assets** | **28** | | **100.0%** | **100.0%** |

Note: Contract loans are loans on contracts issued by the insurance company. They typically pertain to life insurance contracts. There is no schedule within the Annual Statement that pertains to or provides additional disclosure about contract loans.

The assets detailed in Schedules A through C and E make up a relatively small portion of the total admitted assets of the property/casualty insurance industry at year-end 2018 (less than 15%). This relationship has remained relatively consistent over the years. Property/casualty insurers tend to invest in relatively short-term, fixed assets of low risk given their need to be able to pay claims emanating from short-term contracts (as opposed to long-term life insurance contracts). As a result, the largest holding of a property/casualty insurer tends to be in bonds, followed by common stocks. Therefore, Schedule D tends to be the most populated of the asset schedules within the Annual Statement.

In assessing the financial health of an insurance company, it is important to understand differences in the distribution of assets by class relative to the industry. In particular, large concentrations in riskier asset classes would warrant additional scrutiny. The information contained in Schedules A through E and in the notes and interrogatories within the Annual Statement will provide some level of quantitative and

[41] The distribution of assets by class within this table is based on admitted assets. Schedules A through E provide supporting detail for total assets, including amounts that become nonadmitted in column 2 of the asset side of the statutory balance sheet.

qualitative detail to aid in the assessment. However, enhanced understanding will come through inquiries of management as to its investment policy, including any hedging strategies that have been implemented to mitigate investments in higher-risk asset classes.

*Schedules F and P*

Property/casualty actuaries tend to spend more time focusing on page 3 (Liabilities) of the balance sheet than on page 2 (Assets). Therefore, of all the schedules within the Annual Statement, property/casualty actuaries tend to spend the most time with Schedules F and P, in particular Schedule P. Schedule F pertains to reinsurance accounting, and Schedule P pertains to loss and loss adjustment expense reserves. We will devote much of our attention to these Annual Statement schedules in separate chapters for each (Chapter 14. *Schedule F* and Chapter 15. *Schedule P*).

*Schedules T and Y*

The remaining two schedules, Schedule T and Schedule Y, will be discussed at the end of this chapter. These schedules provide details on the insurance company's premium writings by state and organizational structure, respectively.

SCHEDULE A

Schedule A provides information on real estate directly owned by the insurance company. Schedule A, Part 1 provides a detailed listing of all real estate owned by the company as of December 31 of the current year, while Parts 2 and 3 provide a detailed listing of real estate acquired and disposed during the year, respectively.

Schedule A, Part 1, column 9, Book/Adjusted Carrying Value Less Encumbrances, is the source of the information provided in line 4 of the asset side of the balance sheet. Amounts are provided for each property that the reporting entity owns, grouped in the same three parts as shown in line 4 of page 2:

4.1 Properties occupied by the company
4.2 Properties held for the production of income
4.3 Properties held for sale

All figures are shown less the amount of any encumbrances, which include items such as a lien on the company's property or outstanding principal balance of a mortgaged property.

Consistent with the rest of the property/casualty insurance industry (1%), real estate was a small asset class for Fictitious in 2018, representing less than 4% of its total assets. Although small, actuaries will look at the level of an insurance company's investment in long-term assets and associated cash flows relative to the cash outflows of its liabilities. For example, a property/casualty insurer writing short-tailed lines of business (e.g., homeowners) will require relatively liquid and continual flows from its assets to pay its claims. A large proportion of this company's assets in real estate holdings, or other longer-term assets that do not have constant outflows, might raise questions about liquidity of the

company's assets. This is particularly true during unstable economic times when the real estate market is at a low and the seller may not be able to dispose of the investment let alone get the expected value. Schedule A, Part 3 shows what the reporting entity was able to sell real estate investments for over the past year, relative to the value of the investment as shown in the entity's prior-year statement.

SCHEDULE B

Schedule B provides information on mortgage loans owned by the insurance company that are secured by real estate. These are instances where the insurance company has issued a mortgage loan to another party.

Schedule B is organized in the same three parts as Schedule A. Part 1 provides a detailed listing of all mortgage loans owned by the company as of December 31 of the current year, while Parts 2 and 3 provide a detailed listing of mortgage loans acquired and disposed during the year, respectively. Part 3 includes mortgage loans transferred or repaid during the year.

Part 1 is the source of the information provided in line 3 of the asset side of the balance sheet. Line 3 of the asset side of the balance sheet is broken up into two parts:

3.1 First liens
3.2 Other than first liens

The source of the figures provided in line 3 is column 8, book value/recorded investment excluding accrued interest, of Schedule B, Part 1. The figures in column 8 reconcile to the amounts in lines 3.1 and 3.2 on the asset side of the balance sheet. However, it is not evident from Schedule B as to which loans are first liens.

Part 1 provides a detailed listing of mortgage loans owned by the company in the following groupings:

- Mortgages in good standing, which are those loans where the terms are being met by borrowers.
- Restructured mortgages, which are those loans where the terms have been restructured in 1986 or subsequent due to delinquency.
- Mortgages with interest more than 90 days due and not in the process of foreclosure.
- Mortgages in the process of foreclosure.

Issuing mortgages is not a core business strategy of a property/casualty insurance company. Further, mortgage loans are relatively illiquid assets. Therefore, insurers don't have large holdings in Schedule B assets. However, for those insurance companies that do invest in mortgage loans, the groupings provided in Schedule B provide the reader with a sense of the risk associated with the company's mortgage loan investments. For example, investments in mortgages in the process of foreclosure are riskier than those in good standing.

Only 0.2% of Fictitious' assets were invested in mortgage loans on real estate as of December 31, 2018, as compared to 0.3% for the industry.

SCHEDULE BA

Schedule BA provides information on other long-term invested assets owned by the insurance company. These are assets not included in any of the other invested asset schedules, such as real estate that is not owned directly by the insurance company and therefore excluded from Schedule A. Other examples of BA assets include investments in joint ventures, partnership interests and surplus debentures.

Schedule BA, Part 1 provides a detailed listing of other long-term invested assets owned by the company as of December 31 of the current year, while Parts 2 and 3 provide a detailed listing of other long-term invested assets acquired and disposed during the year, respectively. Part 3 includes other long-term invested assets transferred or repaid during the year.

The total in column 12, book/adjusted carrying value less encumbrances, of Schedule BA, Part 1, is the source of the figure provided in line 8 of the asset side of the balance sheet.

As with real estate investments, actuaries will look at the level of cash flows from a company's long-term invested assets relative to the duration of its liabilities for liquidity purposes.

As displayed in Table 17, Fictitious had only 5% of its assets invested in Schedule BA assets at year-end 2018. Schedule BA assets are included within the other investments line. Other investments also include receivables for securities, securities lending reinvested collateral assets and aggregate write-ins for invested assets.

TABLE 17

| **Current-Year Assets, 2018 Annual Statement Page 2, Column 1 (USD)** | |
|---|---|
| 8. Other invested assets (Schedule BA) | 4,726,000 |
| 28. Total assets | 101,454,000 |
| Percentage of total assets (Row 8 / Row 28) | 4.7% |

SCHEDULE D

Schedule D provides information on bonds and stocks owned by the insurance company. It is broken into six parts, 1 through 6. The amounts shown on the assets side of the balance sheet for bonds and stocks comes from the book/adjusted carrying value column, within Schedule D, Parts 1 and 2.

*Part 1*

Part 1 provides a detailed listing of the long-term bonds and certificates of deposit (CDs) *owned* by the insurance company as of December 31 of the current year. The term "long-term" is intended to exclude bonds and CDs with maturity or repurchase dates one year or less from the date acquired and cash equivalents with maturities of three months or less. Bonds that are not long term are reported in other schedules. Bonds with maturities of one year or less are reported in Schedule DA. CDs with maturities of one year or less are reported in Schedule E, Part 1. Cash equivalents are reported in Schedule E, Part 2. Schedules DA and E are discussed in subsequent sections of this chapter.

The source of the balance sheet figure for bonds is the total in column 11 (Book/Adjusted Carrying Value) of Schedule D, Part 1.

In Part 1, bonds are separated into the following categories:

- U.S. governments
- All other governments
- U.S. states, territories and possessions (direct and guaranteed)
- U.S. political subdivisions of states, territories and possessions (direct and guaranteed)
- U.S. special revenue and special assessment obligations and all non-guaranteed obligations of agencies and authorities of governments and their political subdivisions
- Industrial and miscellaneous (unaffiliated)
- Hybrid securities
- Parent, subsidiaries and affiliates

Within each of the aforementioned categories, there are issuer obligations, residential mortgage-backed securities (MBS), commercial MBS, and other loan-back and structured securities, with subtotals for each.

In addition to book/adjusted carrying value, the columns within Part 1 enable the user to obtain an understanding of fluctuations in value over the past year and time to maturity of each bond. As noted, users of the Annual Statement consider time to maturity, and therefore liquidity, relative to liability duration.

*Part 2*

Part 2 provides a detailed listing of the stocks *owned* by the insurance company as of December 31 of the current year. Preferred stocks are in Section 1 of Schedule D, Part 2, and Common stocks are in Section 2.

Schedule D, Part 2 is the source of the information provided within line 2 of the asset side of the balance sheet titled "Stocks (Schedule D)."

The source of the balance sheet figure for preferred stocks is the total in column 8, Book/Adjusted Carrying Value, of Schedule D, Part 2, Section 1, whereas the source for common stocks is the total in column 6, Book/Adjusted Carrying Value, of Schedule D, Part 2, Section 2.

In Part 2, Section 1 of Schedule D, preferred stocks are separated into the following categories:

- Industrial and miscellaneous (unaffiliated)
- Parent, subsidiaries and affiliates

Part 2, Section 2 has the additional categories for common stocks of:

- Mutual funds
- Money market mutual funds

*Parts 3 through 6*

Part 3 provides a detailed listing of long-term bonds and stocks *acquired during the current year* and still owned by the company as of December 31 of the current year. Those acquired and disposed of during the current year are only provided in subtotal in Part 3, with the details reported in Part 5.

Part 4 provides a detailed listing of long-term bonds and stocks that were *owned as of the beginning of the current year* and disposed of during the year through sale, redemption or other means. Those acquired and sold during the current year are provided in detail in Part 5, with only subtotals in Part 4.

Part 6 provides a detailed listing of preferred and common stocks in affiliated companies. This is particularly relevant in the calculation of the $R_0$ charge in the RBC calculation, as we will see in Chapter 19. *Risk-Based Capital*.

SCHEDULE DA

Schedule DA provides information on short-term investments owned by the insurance company. According to the 2018 National Association of Insurance Commissioners (NAIC) *Annual Statement Instructions Property/Casualty*, this schedule is to "include all investments whose maturities (or repurchase dates under repurchase agreement) at the time of acquisition were one year or less except those defined as cash or cash equivalents in accordance with Statement of Statutory Accounting Principles No. 2R, Cash, Cash Equivalents, Drafts, and Short-term Investments."[42]

Schedule DA, Part 1 provides a detailed listing of short-term investments by the company as of December 31 of the current year. This is the source of the information provided within line 5 of the asset side of the balance sheet.

[42] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 367.

Short-term investments can include the following asset classes:

- Bonds
- Mortgage loans and other short-term invested assets for parent, subsidiaries and affiliates
- Mortgage loans
- Exempt money market mutual funds
- Class one money market mutual funds
- Other short-term invested assets

Fictitious had less than 1% of its assets invested in short-term investments in 2018.

SCHEDULE DB

Schedule DB provides information on derivative instruments owned by the insurance company. It is broken into four parts, A through D. Part A provides the company's positions in options, caps, floors, collars, swaps and forwards. Part B provides the company's positions in futures contracts. Part C provides the company's positions in replication (synthetic asset) transactions. And in Part D, the company reports counterparty exposure for derivative instruments open December 31 of the current year. Counterparty exposure is the exposure to credit risk.

Parts A and B are further broken into two sections. Section 1 provides open positions during the year, and Section 2 provides positions terminated during the year.

Schedule DB, Parts A and B are the source of the information provided within line 7 of the asset side of the balance sheet, Derivatives (Schedule DB).

While property/casualty insurance companies do not invest much in the derivatives market, derivatives are used to hedge the mismatch between the timing and payment of assets and liabilities. A company investing in a greater proportion of risky assets than the industry (say a higher proportion in common stocks than bonds), could be expected by its stakeholders to have a hedging strategy in place to mitigate those risks.

As displayed on line 7 of the asset side of its balance sheet, Fictitious did not use derivatives in its investment strategy in 2018.

SCHEDULE DL

Schedule DL provides information on securities lending collateral assets. Schedule DL is a fairly new schedule in the Annual Statement, added in 2010 as a result of the financial crisis in 2008.[43]

[43] NAIC and The Center for Insurance Policy and Research, Capital Markets Special Report, *Securities Lending in the Insurance Industry,* http://www.naic.org/capital_markets_archive/110708.htm, (July 11, 2011)

Securities lending received a lot of publicity during the financial crisis of September 2008. Securities lending involves a company lending securities that it does not actively trade to another party for a fee. The borrower will generally sell the borrowed security, in anticipation of repurchasing it at a lower price before returning it to the lender. The difference between the sale price and repurchase price is profit to the borrower.

The borrower is required to post collateral with the lender. This collateral may in turn be invested by the lender; however, the lender needs to have the collateral available for return when the borrower decides to return the borrowed security. These arrangements tend to be for less than a year, and the borrower generally can return the security on relatively short notice. Therefore, a prudent investment strategy would call for investment of the collateral by the lender in short-term, low-risk, liquid markets. Investment in long-term, riskier securities is one of the causes of the financial crisis in 2008.

According to an article by the NAIC and The Center for Insurance Policy and Research,[44] American International Group (AIG) was involved in securities lending whereby securities owned were loaned in exchange for fee and cash collateral. During the period 2005 through 2007, investments of the collateral were made in long-term subprime residential MBS, which subsequently experienced significant declines in market value. When the borrowers came back to AIG to exchange the borrowed securities for the cash collateral they had provided, AIG was experiencing liquidity constraints. The demand for cash from securities lending counterparties put further constraints on AIG, resulting in regulators and the U.S. government stepping in to help alleviate the liquidity issue and reduce strains on AIG's capital.

While securities lending was not the main cause of the financial crisis in 2008, one of the many lessons learned was the lack of transparency in the securities lending market. Schedule DL was created to provide further transparency by providing detailed information on the collateral assets that are reinvested by the insurance company, including the fair value and book value and the date the agreements mature. As the length of the agreement term increases, so does the risk to the insurance company. If borrowers in the company's securities lending program were to return the borrowed securities and request their collateral back with short notice, the company may have difficulty meeting the cash (collateral) demand.[45]

Schedule DL, Part 1 contains those collateral assets that are not included in other investment schedules within the Annual Statement (e.g., Schedule A, B, BA, D, DA and E). Part 2 contains those that are reported in the other asset schedules. Therefore, Part 1 is the source of the information provided in line 10 of the asset side of the balance sheet.

The total in column 6, Book/Adjusted Carrying Value, of Schedule DL, Part 1, is the source of line 10 of the asset side of the balance sheet.

[44] Ibid.

[45] Regulators became aware of this strategy as a result of the financial examination process, which occurs only once every three to five years.

As displayed in Table 18, Fictitious had an immaterial securities lending program relative to total assets and policyholders' surplus at year-end 2018. As a result, sudden demand to return collateral to a borrower would not have had a significant impact on Fictitious' balance sheet.

TABLE 18

| Current-Year Assets, 2018 Annual Statement Page 2, Column 1 (USD) | |
|---|---|
| 10. Securities lending reinvested collateral assets (Schedule DL) | 79,000 |
| 28. Total assets | 101,454,000 |
| Percentage reinvested collateral assets (Row 10 / Row 28) | 0.08% |
| Total PHS | 31,024,000 |
| Percentage reinvested collateral assets | 0.25% |

SCHEDULE E

Schedule E provides information on the insurance company's cash and cash equivalents.

Schedule E, Part 1 provides:

- A detailed listing of cash on deposit with banks, trust companies, and savings and loan and building and loan associations
- Totals for cash held in the company's offices
- CDs maturing one year or less (long-term CDs are reporting in Schedule D)

Part 2 provides a detailed listing of investments in what are referred to as cash equivalents and are therefore maturing within three months or less.

Part 3 provides a detailed listing of special deposits, which include assets reported in the various asset schedules within the Annual Statement but are segregated for a special purpose, such as bail bonds, workers' compensation, property and casualty insurance, collateral and escrow.

Column 6, Balance, of Schedule E, Part 1, is the source of the cash amount included in line 5 of the asset side of the balance sheet. Column 6, book/adjusted carrying value of Schedule E, Part 2, is the source of the amount of cash equivalents, which are also included in line 5.

Table 19 shows that Fictitious had less than 1% of its assets in cash and cash equivalents at year-end 2018.

TABLE 19

| Current-Year Assets, 2018 Annual Statement Page 2, Column 1 (USD) | |
|---|---|
| 5. Cash ($153,000, Sch. E-Part 1), cash equivalents ($0, Sch. E-Part2) and short-term investments ($829,000, Sch. DA) | 983,000 |

| | |
|---|---|
| 28. Total assets | 101,454,000 |
| Percentage of total assets (Row 5 / Row 28) | 1.0% |

SCHEDULE T

Schedule T has two parts:

1. Exhibit of Premiums Written
2. Interstate Compact — Exhibit of Premiums Written

Each part is arranged showing its content by U.S. state (50); the District of Columbia; five U.S. territories (American Samoa, Guam, Puerto Rico, U.S. Virgin Islands and Northern Mariana Islands); Canada; and a line for aggregate other alien territories.[46]

The following provides a general description of the content of each part and their use(s).

*Exhibit of Premiums Written*

The purpose of this schedule is to apportion premiums, losses and other items amongst the states or territories in which the company writes business.

The first column shows the "active status" of the company for each state/territory. Active status is denoted by:

L: Licensed insurance carrier or domiciled Risk Retention Group (RRG)
R: Registered — non-domiciled RRGs
Q: Qualified or accredited reinsurer
E: Eligible — reporting entities eligible or approved to write surplus lines in the state
N: None of the above — not allowed to write business in the state

The total line of this column shows the number of states/territories that the company is licensed in.

Direct losses, premiums and other information are required to be allocated by state/territory regardless of the active status reported. The information requested includes:

- Written premiums
- Earned premiums
- Policyholder dividends
- Paid losses
- Incurred Losses

[46] According to the glossary in the textbook *Property-Casualty Insurance Accounting* issued by Insurance Accounting & Systems Association, Inc., Eighth Edition (2003), First Addendum (2006), an alien insurance company is defined as "An insurer or reinsurer domiciled outside the U.S. but conducting an insurance or reinsurance business in the U.S."

- Unpaid losses
- Finance and service charges
- Direct premiums written for federal purchasing groups

The complicated part of completing this schedule is figuring out how to allocate the foregoing items by state/territory. The NAIC *Annual Statement Instructions Property/Casualty* looks for the premiums to be reported "based on the physical location of the insured risk (except individual and group health insurance)."[47] Losses are to be reported to the states where the associated premium is allocated.

For example, an insurer writes workers' compensation insurance for an organization that has employees located across the country. The foregoing items need to be allocated to each state/territory based on primary workplace of each employee. Table 20 shows additional examples of the basis for allocating premiums and losses by state/territory, according to the NAIC instructions.

TABLE 20

| Line of Business | Basis for Allocation by State |
|---|---|
| Property lines, such as fire, homeowners, boiler and machinery | Location of property |
| Marine coverages, where property is in transit | Beginning state location |
| Automobile lines | Location of principal garage of each automobile |
| Liability lines (other than auto) where premium determined per location | Location of principal office of operation |

Companies are required to describe the basis for the allocation in the footnote of Schedule T.

Schedule T is useful to actuaries in several instances, such as the following:

- Actuaries use this schedule to learn where the company writes its business to further research and consider the insurance laws of those states. This is particularly important for workers' compensation insurers where estimates of unpaid claims depend on each state's laws.

- Actuaries also look to this schedule over a series of historical Annual Statements to see if the company has changed geographic concentration or is growing in a particular state. In addition to regulatory differences by state, changes in geographic mix have an impact on the exposures. For example, for a company writing in California or among fault lines, consideration should be made of the company's exposure to earthquakes.

[47] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 241.

- For a company where industry loss development factors are used in reserving, actuaries may look to this schedule for a distribution of losses by state to determine weights to apply to industry factors by state.

In addition, as we shall see in Chapter 18. *Insurance Expense Exhibit*, the totals in Schedule T are used as a means of reconciling items contained in the Insurance Expense Exhibit.

*Interstate Compact — Exhibit of Premiums Written*

There is another part to Schedule T that is less well-known to property/casualty actuaries: Interstate Compact — Exhibit of Premiums Written and Allocated by States and Territories. Part 2 only pertains to property/casualty insurers that also write life insurance, annuities, disability income and long-term care insurance products. The purpose of Part 2 is for regulators to monitor writings in these products for consumer protection purposes.

SCHEDULE Y

Schedule Y, Information Concerning Activities of Insurer Members of a Holding Company Group, has two parts:

1. Organizational chart
2. Summary of insurer's transactions with any affiliates

The following provides a brief description of the content and purpose of each.

*Part 1 — Organizational Chart*

Part 1 is required for those companies that file a registration statement under the Insurance Holding Company System Regulatory Act of the company's domiciliary state.[48]

This part provides exactly what its name says, an organizational chart. In simplest terms, it is similar to a family tree, showing a pictorial representation of where the company lies within an organization and its relationship to the other members of the organization.

We often hear the phrases "sister company," "parent company" and "holding company," but until you see the schematic, it can be difficult to understand where a company fits within an organization. Knowing this and the company's purpose relative to its affiliates is important. For example, the company may have an affiliated managing general agent or other agency that produces its business, or it may have an affiliated claims administrative organization. Consideration of the affiliate's underwriting philosophy and/or claims handling practices is significant in estimating unpaid claims and establishing reserves for the company's liabilities, including those for adjusting expenses.

[48] Ibid., page 247.

Sometimes this part is provided in list form as opposed to an actual chart due to the number of companies involved.

*Part 1A — Detail of Insurance Holding Company System*

This part must be completed by members of a holding company system. The purpose is to provide information about the relationship between the reporting entity and any parent, subsidiary(ies) and/or affiliate(s). The relationship is identified in Part 1A as either:

- Upstream direct parent (UDP)
- Upstream indirect parent (UIP)
- Downstream subsidiary (DS)
- Insurance affiliate (IA)
- Non-insurance affiliate (NIA)
- Other, which requires an explanation of the relationship in the footnotes to this part (OTH)

Additionally, the controlling entity in the relationship is provided, along with the type of control that the entity has over the other:

- Control through ownership
- Control at the board of directors level
- Control through management
- Control by acting as the attorney-in-fact
- Controlling influence
- Other

If the reporting entity is a member of a holding company system, the reporting entity must include the above items for each parent, subsidiary or affiliate of the reporting entity whose names are listed in column 8 of Schedule Y.

According to the NAIC 2018 *Annual Statement Instructions Property/Casualty*, which references the Insurance Holding Company System Regulatory Act, "Control shall be presumed to exist if any person, directly or indirectly, owns, controls, holds with the power to vote, or holds proxies representing, ten percent (10%) or more of the voting securities by another person."[49]

As we shall see in Chapter 19. *Risk-Based Capital*, this information is particularly useful in determining the RBC $R_0$ charge for investments in insurance affiliates.

[49] Ibid., page 249.

*Part 2 — Summary of Insurer's Transactions With Any Affiliates*

Schedule Y, Part 2, provides a listing of transactions among members of the holding company system where an insurance affiliate was a party to the transaction. Examples include:

- Shareholder dividends
- Capital infusions
- Purchases/sales of loans or real estate
- Management agreements and service contracts
- Income (disbursements) incurred under reinsurance contracts and reinsurance recoverable (only those transactions that took place during the reporting period are included)

The purpose of this part of Schedule Y is to assist regulators in monitoring monetary flows in and out of insurance company affiliates. This schedule is the same for all members of an insurance holding company system. Therefore, the totals all balance to zero, as an outflow from one company is offset by the inflow to another.

## CHAPTER 14. SCHEDULE F

OVERVIEW

As noted in the previous Chapter 13. *Overview of Schedules and Their Purpose*, Schedule F and Schedule P are two of the Annual Statement schedules that property/casualty actuaries tend to use most. In this chapter we will focus on the content of Schedule F; Chapter 15 focuses on the content of Schedule P.

Schedule F provides details underlying an insurance company's reinsurance transactions on prospective contracts[50] that meet the conditions for reinsurance accounting as defined in SSAP No. 62R. It includes the names of the counterparties to the transactions and the premium, loss and expense amounts that emanate from those transactions as of December 31 of the reporting year. This information is important to actuaries for several reasons:

- Loss and loss adjustment expense (LAE) reserves recorded by an insurance company include business assumed by the company. Knowledge of the source and amount of assumed reinsurance provides valuable information to an actuary in assessing the reasonableness of the gross and net loss and LAE reserve balances. Schedule F, Part 1 provides a listing of assumed premiums and losses by ceding company.

- Loss and LAE reserves recorded on an insurance company's statutory balance sheet are net of reinsurance. Considerable focus is placed on the collectability of that reinsurance by users of the Annual Statement, particularly regulators. In fact, the NAIC Instructions to the Statement of Actuarial Opinion require the Appointed Actuary to provide relevant comment paragraphs to address reinsurance. According to the NAIC Instructions, "Before commenting on reinsurance collectability, the actuary should solicit information from management on any actual collectability problems, review ratings given to reinsurers by a recognized rating service, and examine Schedule F for the current year for indications of regulatory action or reinsurance recoverable on paid losses over 90 days past due."[51]

  Schedule F, Part 3 provides the name of each of the company's reinsurers, a listing of liability amounts ceded to each reinsurer and the amount of collateral held by the insurance company in support of those liabilities. Using this information, research can be done on the financial ratings of the reinsurers to evidence the credit quality of the reinsurer and assess the risk that the ceding company would not able to collect the balances due from that reinsurer.

[50] According to paragraph 22 of SSAP No. 62R, Property and Casualty Reinsurance, "Prospective reinsurance is defined as reinsurance in which a reinsurer agrees to reimburse a ceding entity for losses that may be incurred as a result of future insurable events covered under contracts subject to the reinsurance."
[51] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 13.

Schedule F, Part 3 also provides the aging of ceded reinsurance. An assessment can be made of the company's exposure to collectability issues in light of the reinsurer's payment history and the amount of collateral the company holds in support of its reinsured balances.

- The Statement of Actuarial Opinion also requires the Appointed Actuary to comment on and disclose the amount of net reserves for the insurance company's participation in underwriting pools and associations. Schedule F, Part 1 provides a source for this information. In fact, regulators expect there to be a reconciliation of the amount disclosed in the Statement of Actuarial Opinion to Schedule F.[52]

Schedule F also provides the derivation of the provision for reinsurance, which is included as a liability on the statutory balance sheet (page 3, line 16 of the 2018 Annual Statement). While Statutory Accounting Principles (SAP) requires insurance companies to record loss and LAE reserves net of reinsurance, SAP also presumes that a portion of that reinsurance is not collectible. The provision for reinsurance provides "a minimum reserve for uncollectible reinsurance with an additional reserve required if an entity's experience indicates that a higher amount should be provided. The minimum reserve Provision for Reinsurance is recorded as a liability, and the change between years is recorded as a gain or loss directly to unassigned funds (surplus). Any reserve over the minimum amount shall be recorded on the statement of income by reversing the accounts previously utilized to establish the reinsurance recoverable."[53]

This minimum reserve is computed in Schedule F, Part 3. It reflects the conservative nature of statutory accounting since the entire provision may ultimately be collected.

Schedule F – Part 3 also provides the data used in the calculation of the credit risk charge for reinsurance recoverables required by the NAIC Risk-Based Capital (RBC) formula.

Finally, Schedule F also provides a view of the reporting entity's balance sheet on a gross of reinsurance basis. Ceded reinsurance is a valuable means for insurance companies to mitigate insurance risk. Schedule F, Part 6 enables the user to observe the amount of protection afforded to the company's balance sheet through the use of reinsurance.

Note that retroactive reinsurance does not flow through Schedule F.[54] Ceding companies record loss and LAE reserves gross of retroactive reinsurance and assuming companies exclude the retroactive

[52] American Academy of Actuaries Committee on Property and Liability Financial Reporting, "Statements of Actuarial Opinion on Property and casualty Loss Reserves 2012," Appendix 9a, "Regulatory Guidance On Property and Casualty Statutory Statements of Actuarial Opinion for the Year 2012 Prepared by the NAIC's Casualty Actuarial and Statistical (C) Task Force," page 99.
[53] SSAP No. 62R, paragraph 64.
[54] According to paragraph 22 of SSAP No. 62R, "Retroactive reinsurance is defined as reinsurance in which a reinsurer agrees to reimburse a ceding entity for liabilities incurred as a result of past insurable events covered under contracts subject to the reinsurance." Note that there are exceptions for property/casualty run-off agreements whereby the entire risk for a line of business or segment (e.g., asbestos liabilities) is retroactively

reinsurance from loss and LAE reserves. The same is true for Schedule P[55]; retroactive reinsurance does not flow through Schedule P.

STRUCTURAL ORGANIZATION OF SCHEDULE F

Schedule F is arranged in the following six parts:

Part 1 Assumed Reinsurance as of December 31, Current Year ($000 Omitted)

Part 2 Premium Portfolio Reinsurance Effected or (Canceled) during Current Year

Part 3 Ceded Reinsurance as of December 31, Current Year ($000 Omitted)

Part 4 Issuing or Confirming Banks for Letters of Credit from Schedule F, Part 3 ($000 Omitted)

Part 5 Interrogatories for Schedule F, Part 3 ($000 Omitted)

Part 6 Restatement of Balance Sheet to Identify Net Credit for Reinsurance

Parts 1 and 3 provide details underlying the reinsurance items on a company's balance sheet. One asset item and four liability items on an insurance company's balance sheet come directly from Schedule F.

The asset item is "amounts recoverable from reinsurers" (Assets, page 2, line 16.1). It includes amounts the insurance company has already paid in loss and LAE to its claimants that are recoverable from its reinsurers. The first of the liability items provide this balance from the reinsurer's (i.e., the company in this case, as an assumed reinsurer) perspective (Liabilities, Surplus and Other Funds, page 3, line 2).

The other three liability items that come directly from Schedule F include ceded reinsurance premiums payable, net of ceding commissions, (Liabilities, Surplus and Other Funds, page 3, line 12), funds held by the company under reinsurance treaties (Liabilities, Surplus and Other Funds, page 3, line 13), and the provision for reinsurance (Liabilities, Surplus and Other Funds, page 3, line 16). In addition, the parenthetical reference to unearned premiums for ceded reinsurance in line 9 of page 3 also comes from Schedule F, Part 3 (column 13, total).

Schedule F, Part 3 is used to derive the provision for reinsurance. Effective with the 2018 Annual Statement, numerous individual parts used to derive the provision for reinsurance were consolidated into a single new Part 3 within Schedule F. This "eliminates duplication, promotes consistency of the reported ceded transactions, provides for greater automation, and reduces filing errors."[56]

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transferred by a ceding company to a reinsurer. We will not get into the specifics in this publication, but note that the accounting for this type of contract can be found in paragraphs 81-84 of SSAP No. 62R.

[55] SSAP No. 62R, paragraph 29.

[56] NAIC Banks (E) Working Group, Agenda Item # 2016-35BWG MOD, https://www.naic.org/documents/cmte_e_app_blanks_related_adopted_mods_2016-35BWG_Modified.pdf, page 57.

The following illustrates how the amounts in the balance sheet map to those in Schedule F using the 2018 Annual Statement for Fictitious Insurance Company[57]:

TABLE 21

| **Company:** | **Fictitious Insurance Company** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Annual Statement for the year:** | **2018** | | | | | | |
| **Assets, page 2** | | | **Schedule F Source** | | | | |
| **Line** | **Item** | **Current Year** | **Part** | **Column** | **Item** | **Row** | **Amount** |
| 16.1 | Amounts recoverable from reinsurers | 426,000 | 3 | 7 + 8 (and 43) | Reinsurance recoverable on paid losses and paid LAE | Totals | 426 |
| **Liabilities, Surplus and Other Funds, page 3** | | | **Schedule F Source** | | | | |
| **Line** | **Item** | **Current Year** | **Part** | **Column** | **Item** | **Row** | **Amount** |
| 2. | Reinsurance payable on paid losses and loss adjustment expenses | — | 1 | 6 | Reinsurance on paid losses and loss adjustment expenses | Totals | — |
| 9. | Unearned premiums for ceded reinsurance (parenthetical amount) | 920,000 | 3 | 13 | Reinsurance recoverable on unearned premium | Totals | 920 |
| 12. | Ceded reinsurance premiums payable (net of ceding commissions) | 440,000 | 3 | 17 | Ceded reinsurance balances payable | Totals | 440 |
| 13. | Funds held by company under reinsurance treaties | 170,000 | 3 | 20 | Funds held by Company under reinsurance treaties | Totals | 170 |
| 16. | Provision for reinsurance | 283,000 | 3 | 78 | Provision for reinsurance | Totals | 283,000 |

While relevant, Parts 2 and 4 through 6 tend to get less attention by actuaries. As the name suggests, Schedule F, Part 2 provides the user with a detailed listing of all portfolio reinsurance transactions entered into or canceled during the current year.

Schedule F, Part 4 provides a listing of issuing or conforming banks for letters of credit as collateral reported in Schedule F, Part 3, column 22.

Schedule F, Part 5 provides interrogatories for Schedule F, Part 3. The interrogatories include two tables with more detailed information. The first identifies the five largest commission rates included in the cedant's reinsurance treaties for those contracts where ceded premium is in excess of $50,000[58]. The second table identifies the five largest reinsurance recoverables reported in column 15 and associated

[57] In gaining an understanding of the interplay between the Financial Statements and various Schedules within the Annual Statement, it is important to remember that the amounts in Schedule F, Parts 1 and 3 are displayed in thousands of U.S. dollars, whereas amounts on the balance sheet, as well as in Schedule F, Part 6, are in whole dollars.

[58] According to the NAIC Annual Statement Instructions, the five largest should exclude mandatory pools and joint underwriting associations.

ceded premiums, as well as an indicator as to whether the reinsurer is affiliated with the reporting entity.

Schedule F, Part 6 provides a summarized form of the balance sheet with adjustments to restate it on a gross of ceded reinsurance basis. The assets are adjusted to remove any expected recoverables from the company's reinsurer, while the liabilities are restated to remove any anticipated recoveries or payables.

Given the limited level of focus on Parts 2 and 4 through 6 by property/casualty actuaries, we will provide only a brief description of their contents and use. We will devote the majority of this chapter on the contents of the other parts of Schedule F, including the calculation of the provision for reinsurance in Part 3.

SCHEDULE F — PART 1: ASSUMED REINSURANCE AS OF DECEMBER 31, CURRENT YEAR ($000 OMITTED)

*Overview*

Part 1 provides the total amount of the insurance company's assumed reinsurance balances by reinsured. It enables the user to obtain an additional understanding of the amounts at stake and risks associated with an insurance company's assumed reinsurance transactions as of the current year.

With Part 1, each reinsured is separated into the following groups or categories, with subtotals at the end of each category and group:

- Affiliated Insurers:
    - U.S. Intercompany Pooling
    - U.S. Non-Pool - Captive
    - U.S. Non-Pool - Other
    - Other (Non-U.S.) – Captive
    - Other (Non-U.S.) – Other
- Other U.S. Unaffiliated Insurers
- Pools and Associations:
    - Mandatory Pools, Associations or Other Similar Facilities
    - Voluntary Pools, Associations or Other Similar Facilities
- Other Non-U.S. Insurers

Knowledge of the group or category the reinsured is in, as well as the name of the reinsured, provides the user of the Annual Statement with further insight as to the risk associated with the assumed transaction.[59] For example, the reporting entity may have less control over and knowledge of the risks assumed from an unaffiliated non-U.S. insurer than it would of risks assumed from a U.S. affiliate.

[59] Reinsurance assumed from pools and associations is generally reported by the name of the pool or association. As a result, it is difficult to gain insight about the underlying risks of the pool(s) and/or association(s) that the insurer participates in from Schedule F alone.

In terms of its structure, the first four columns of Part 1 provide the ID number, NAIC company code, name of the reinsured and the reinsured's domiciliary jurisdiction. The ID number is one of the following, as appropriate:

- Federal Employer Identification Number (FEIN)
- Alien Insurer Identification Number (AIIN)
- Certified Reinsurer Identification Number (CRIN)
- Pool/Association Identification Number

The remaining 11 columns provide the dollar amounts pertaining to the assumed reinsurance transactions, including premiums, loss and LAE liabilities, contingent commissions, and the type of collateral required by the ceding company to secure balances owed to it by the reporting entity.

*Premiums*

The amount of written premium assumed by the insurance company from the reinsurer during the year is shown in column 5. The totals in column 5 ($000 omitted) will reconcile to the sum of the totals in columns 2 (reinsurance assumed from affiliates) and 3 (reinsurance assumed from non-affiliates) in Part 1B of the Underwriting and Investment Exhibit (shown in whole dollars).

Assumed premiums receivable, less commissions payable, are shown in column 10. The amount of commissions payable does not include contingent commissions, which are shown in column 9 and discussed below. The amount considered in column 10 is for fixed commissions. For example, if the reporting entity wrote a reinsurance contract for premium of $500,000 with a fixed ceding commission of 25%, all of which was unpaid at the end of the year, the figure in column 10 would be the $500,000 of assumed premium receivable less $125,000 of commissions payable, for a total of $375,000.

The total in column 10 ($000 omitted) is included as a part of agent's balances in line 15 (premiums and considerations) of page 2. As we will see later, this is considered in the profit calculation in the IEE.

Unearned premium on assumed business is provided in column 11. This is a liability to the insurance company and is included within line 9 of page 3, entitled unearned premiums, as well as the unearned premium reserves contained in Parts 1 and 1A of the Underwriting and Investment Exhibit. The unearned premium reserves on page 3 and in the Underwriting and Investment Exhibit are net of reinsurance. As such, the assumed unearned premium reserves listed in column 11 of Schedule F, Part 1 make up only one piece of these net amounts.

The amount in column 11 ($000 omitted) should reconcile directly to item (1) within the *"Reinsurance"* note of the "Notes to Financial Statements" titled *"Reinsurance Assumed and Ceded"* (shown in whole dollars; Notes 23C of Fictitious' 2018 Annual Statement).

*Loss and LAE liabilities*

Known liabilities owed by the reporting entity (i.e., the insurance company) to the reinsured (i.e., ceding company) as of December 31 of the current year are displayed in columns 6 and 7, with column 8 being the sum of the two.

- Column 6 (reinsurance recoverable on paid losses and LAE) represents losses and LAE that the ceding company has already paid but for which the insurance company has yet to pay to the reinsured.
- Column 7 (reinsurance recoverable on known case losses and LAE) represents the amount of losses and LAE reported by the ceding company as case reserves for which the reporting entity has included in its direct plus assumed case reserves stated on Schedule P, Part 1 and its net loss and LAE reserves stated on page 3 of the balance sheet.[60]

The above information is valuable to the actuary in assessing the reasonableness of unpaid claims. The actuary can reconcile the case reserves relied upon in the actuarial analysis to Schedule F, Part 3 and determine where the ceded loss reserves are coming from. However, Part 1 does not provide assumed IBNR. While a ceding company may report IBNR figures to its reinsurer, the reinsurer is responsible for estimating and recording assumed IBNR.

As shown in Table 21, the total in column 6 (reinsurance recoverable on paid losses and LAE; $000 omitted) reconciles to the amount on page 3, line 2 (reinsurance payable on paid losses and LAE, displayed in whole dollars). However, the total in column 7 ($000 omitted) does not reconcile directly to any exhibits or schedules within the Annual Statement. Known case reserves for losses are a part of the reported losses included in column 2 of the Underwriting and Investment Exhibit, Part 2A; however, LAE would need to be added to this balance to reconcile to the amount in Schedule F, Part 1, column 7.

*Contingent commissions*

Column 9 provides a listing of contingent commissions payable. Reinsurers pay ceding companies a commission for the premium income generated under the reinsurance contract. Contingent commissions payable represent profit commissions generated from assumed reinsurance contracts that have yet to be paid as they are “contingent” on the profitability of the underlying reinsurance arrangement. The total amount listed in column 9 ($000 omitted) is included within the amount on page 3, line 4, entitled *Commissions payable, contingent commissions and other similar charges*. The amount in column 9 ($000 omitted) should reconcile to item (2) within the “Reinsurance” note of the “Notes to Financial Statements” titled “Reinsurance Assumed and Ceded” (Note 23C of the 2018 Annual Statement), which provides the amount of additional or return commission contingent upon loss experience or other forms of profit-sharing arrangement as a result of existing contracts (shown in whole dollars).

[60] This is only true for those companies that do not participate in intercompany pooling. A discussion of the treatment of intercompany pooling in Schedule P is provided in Chapter 15. *Schedule P* of this publication.

Let's go back to the example we used in our explanation of column 10 (assumed premiums receivable), but this time, let's assume that the 25% ceding commission is on a one-to-one sliding scale basis instead of being fixed. The 25% ceding commission assumes a 75% loss ratio. If the loss ratio is worse than expected and ends up being 80%, then the ceding commission drops to 20%. If the loss ratio turns out to be better than expected and is 65%, for example, then the ceding commission increases by 10 points to 35%.

The amount of assumed premium receivable in column 10 would be $500,000, and the contingent commissions payable in column 9 would be $125,000, which is the amount of expected commission at the onset of the contract. Let's fast-forward to the end of the following year and assume that the $500,000 in premium was paid by the ceding company (reinsured) to the reporting entity (reinsurer), and the $125,000 in ceding commission was paid by the reporting entity to the ceding company. However, based on actual loss experience to date, the reporting entity now knows that the loss ratio is 65% as opposed to the 75% originally expected. This means that the reporting entity will owe the ceding company 10 more points of commission, or $50,000. The $50,000 would be shown in column 9 as a positive number and is a liability to the reporting entity. Of course, since the $500,000 in premium has already been received by the reporting entity, the amount shown in column 10 would be $0.

*Security*

The remaining columns of Schedule F, Part 1 (columns 12 through 15) provide forms of security that ceding companies often require of their reinsurers to avoid credit risk or an insolvency problem with the reinsurer.

Funds held

Funds held by or deposited with reinsured companies (column 12) represent an asset to the reinsurance company and a liability to the ceding company. It represents a provision within a reinsurance contract under which a portion of the premium due to the reinsurer is withheld by the ceding company to pay claims. There is usually a limit to the funds-held balance; however, it is replenished as (or when) it is absorbed.

Not only do the funds held reduce credit risk, but they also serve to reduce the administrative burden of the reinsured having to go to the reinsurance company to collect each time it makes a loss payment. This provision is often beneficial to the reinsurer as the funds withheld are credited for interest, the rate of which is determined in the contract. Given the benefit, this is one provision that is considered in the evaluation of whether a reinsurance contract transfers underwriting risk.

Letters of credit

The dollar amount underlying any letters of credit that the reporting entity is required to post to benefit the reinsured is shown in column 13. Letters of credit are issued by a bank in favor of the reinsured in the event that the reinsurer is unable to meet its obligations. Reinsureds tend to favor this form of credit because it is not part of the estate of an insolvent reinsurer and therefore not tied up or subject to

degradation in bankruptcy or liquidation proceedings. However, letters of credit can be very costly to the reinsurer. First, banks charge the reinsurer a fee, and this fee can be very high in uncertain economic times, as experienced during 2008 and several years thereafter. Second, letters of credit serve as a reduction to the reinsurer's line of credit with a bank and therefore reduce the amount of collateralization available on its debt obligations.

Amount of assets pledged or collateral held in trust

Broadly speaking, these are amounts not otherwise included within the funds-held provision. Unlike the other two types of security (funds held and letters of credit), these assets or collateral amounts are under the control of the reinsurer.

As we will see in Schedule F, Part 3, the funds-held provision and letters of credit serve to reduce a ceding company's provision for reinsurance.

*Schedule F — Part 1 for Fictitious Insurance Company*

Because Fictitious Insurance Company does not have any assumed reinsurance, these balances are $0 within Fictitious' 2018 Annual Statement. However, a reconciliation of these balances could be made within the Annual Statement for another company on the Exam 6 U.S. Syllabus.

SCHEDULE F — PART 2: PREMIUM PORTFOLIO REINSURANCE EFFECTED OR (CANCELED) DURING CURRENT YEAR

*Overview*

Part 2 provides a detailed listing of portfolio reinsurance transactions effected or canceled during the current year. Portfolio reinsurance is the transfer of policies in force or liabilities remaining on a block of the insurance company's business. Companies tend to enter into these arrangements when they:

- Want to discontinue writing a certain business
- Would like to get the risk or uncertainty associated with the liabilities off of their books
- Need surplus relief, which can come in the form of the discounted premium

However, these transactions come at a price, as the reinsurer will require a risk premium; the benefit of these contracts must be weighed with the cost.

*Schedule F – Part 2 for Fictitious Insurance Company*

Fictitious Insurance Company neither effected nor canceled any portfolio reinsurance during 2018.

SCHEDULE F — PART 3: CEDED REINSURANCE AS OF DECEMBER 31, CURRENT YEAR ($000 OMITTED)

*Overview*

Part 3 is one of the most referenced parts within Schedule F. Part 3 provides a comprehensive listing of the company's ceded reinsurance balances by reinsurer. It shows the dollar amounts relating to ceded reinsurance contracts, which enable the user to identify amounts recoverable from each of the company's reinsurers and assess credit risk.

Each reinsurer in Part 3 is separated into the same groups and categories as Part 1, with the addition of protected cells.[61] However, these groups and categories are provided separately for authorized reinsurers, unauthorized reinsurers and certified reinsurers,[62] with subtotals for each. As we shall see, the categorization of authorized, unauthorized and certified is used in the calculation of the provision for reinsurance, which culminates in column 78.

Schedule F, Part 3, is separated into 5 "sections":

[61] A protected cell company is one that is organized for the creation of separate cells, each having its own assets and liabilities, but also having access to a part of the company's overall capital. The liability to each cell is limited such that creditors to one cell cannot look to another cell or the company as a whole for assets. Only certain jurisdictions currently have insurance legislation pertaining to protected cell companies.

[62] An authorized reinsurer is one that is licensed or approved to transact insurance business in a jurisdiction; an unauthorized reinsurer is not. A certified reinsurer is an assuming insurer that has been certified as a reinsurer in the domiciliary state of the ceding insurer and secures its obligations in accordance with the requirements of Appendix A-785, *Credit for Reinsurance*, of the NAIC *Accounting Practices and Procedures Manual*.

- The first 20 columns detail the ceded reinsurance balances
- Columns 21 through 36 calculate credit risk on ceded reinsurance
- Columns 37 through 53 provide the aging of ceded reinsurance
- Columns 54 through 69 provide the calculation of the Provision for Reinsurance for Certified Reinsurance
- Columns 70 through 78 provide the Total Provision for Reinsurance (authorized, unauthorized and total)

*Ceded Reinsurance Balances (the first 20 columns of Part 3)*

Similar to Part 1, Part 3 starts off with a listing of the ID Number, NAIC Company Code, name of each of the Company's reinsurers (reinsured in Part 1), and the domiciliary jurisdiction of each reinsurer (reinsured in Part 1).

*Special Code*

Column 5 of Schedule F, Part 3, is used to identify reinsurance relationships of heightened importance to regulators or those where special considerations are made in the calculation of the provision for unauthorized reinsurance. A specifically defined number code is indicated in the applicable row for situations outlined below.

*Special Code "2" - Cessions of 75% or more of subject premium*

By definition, an insurance company is a risk-bearing entity. When an insurance company decides to cede most, if not all, of the risk under a contract, regulators need to understand why an insurer writes business and then cedes a large portion of it to another insurer. Column 5 identifies, through an indicator of the number 2 in the relevant row, each individual reinsurance contract whereby 75% or more of the subject direct written premiums are ceded. The purpose of column 5 is to identify situations where the reporting entity may be acting as a fronting carrier for another company (the reinsurer) in a particular state where the reinsurer is not licensed to transact business. Regulatory concern is that the reinsurer is using the fronting company to avoid regulatory oversight.

We often see this in the case of workers' compensation insurance due to the strict licensing requirements. For example, Insurer A may wish to write workers' compensation for a retail organization with locations along the west coast of the U.S. However, Insurer A may not be licensed to write workers' compensation insurance in California. Insurer A may turn to Insurer B, which is licensed in California, to write the policy on Insurer A's behalf. In turn, Insurer B would cede 100% of the exposure to Insurer A. Insurer B would require a fronting fee to provide this service to Insurer A.

Certain reinsurance transactions are exempt from this requirement, as they are not fronting arrangements and their purpose is not to avoid regulatory oversight. These transactions include:

- Intercompany cessions with affiliates, as these are used to share risks across related companies
- Cessions to a group, association, pool or organization of insurers that underwrite jointly and are subject to examination by any state regulatory authority or that operate pursuant to any state or federal statutory or administrative authorization, such as a workers' compensation or auto assigned risk pool
- Those where the gross annual premium ceded is less than 5% of policyholder surplus, as these transactions are deemed immaterial and may represent situations where an insurance company is exiting a line of business as opposed to a fronting arrangement
- Cessions to captive insurance companies, which are regulated in their domiciliary state (captive insurance companies are used by parent companies (non-insurance) to keep commercial insurance costs down)

*Special Code "3" – Counterparty Reporting Exception for Asbestos and Pollution Contracts under SSAP No. 62R – Property Casualty Reinsurance*

Special Code "3" identifies those reinsurers that have been aggregated into one line in Schedule F in accordance with the counterparty reporting exception for asbestos and pollution contracts under SSAP No. 62R paragraphs 66 through 68. This exception allows the Provision for Reinsurance to be reduced by reflecting that amounts have been recovered by the reporting entity under duplicate coverage provided by the retroactive contract, and that inuring balances from the original contract(s) are payable by the retroactive counterparty, if applicable. In order for this exception to be employed, the agreement must comply with paragraphs 66.a. through 66.e. and the reporting entity must obtain prior approval by its domiciliary regulator.

If this exception is employed, the reporting entity must complete the *Supplemental Schedule for Reinsurance Counterparty Reporting Exception – Asbestos and Pollution Contracts*.

Note that this exception only applies to the calculation of the Provision for Reinsurance and how these contracts are presented in Schedule F. It does not change the treatment of retroactive reinsurance accounting.

*Special Code "4" – Incurred but not Reported Losses on Contracts in Force Prior to July 1, 1984 that are Exempt from the Statutory Provision for Unauthorized Reinsurance*

IBNR losses on contracts in force prior to July 1, 1984 and not subsequently renewed are exempt from the statutory provision for unauthorized reinsurance. These contracts are identified by a 4 in this column with details of amounts provided in Part 2, Question 17, of the General Interrogatories to enable the reader to assess significance.

Many of the columns in the first section (the first 20 columns) of Schedule F, Part 3, are mirror images (albeit with different column numbers) to the corresponding contents of Part 1 for assumed reinsurance and pertain to premiums ceded, reinsurance recoverable, reinsurance payable and funds held by the

reporting entity. In our discussion of the remaining columns of Part 3, we provide parenthetical references to amounts in Schedule F of Fictitious Insurance Company's 2018 Annual Statement where applicable.

*Premiums ceded*

The amount of written premium that is ceded to each of the company's reinsurers during the year is shown in column 6. The total amount in column 6 ($1,882; $000 omitted) should reconcile to the total of columns 4 plus 5 in Part 1B of the Underwriting and Investment Exhibit (shown in whole dollars).

*Reinsurance recoverable*

Columns 7 and 8 provide recoverables on paid losses and LAE ($426; $000 omitted). These are booked as an asset on the insurance company's balance sheet ($426,000 on page 2, line 16.1) because the company is awaiting receipt of a recovery from its reinsurer on payments that the insurance company already made to the claimant.

Columns 9 through 12 provide recoverable on unpaid loss and LAE. The totals of column 9 ($5,343; $000 omitted) will reconcile to the Underwriting and Investment, Part 2A, column 3 (shown in whole dollars). The totals of column 11 ($4,038; $000 omitted) will reconcile to the Underwriting and Investment, Part 2A, column 7 (shown in whole dollars).

For companies that do not participate in intercompany pooling, Schedule F, Part 3, columns 9 through 12 are equal to the amount of ceded reserves that are netted against the gross loss and LAE reserves, which result in the net loss and loss adjustment expense reserves shown on page 3 of the balance sheet in rows 1 plus 3. Columns 9 through 12 should also reconcile to the sum of the totals in columns 14, 16, 18, 20 and 22 of Schedule P, Part 1 – Summary as follows:

- The totals in Schedule F, Part 3, columns 9 and 11 ($5,343 and $4,038) should reconcile directly to the total amounts in Schedule P, Part 1, columns 14 and 16 ($5,343 and $4,038), respectively.[63]
- Similarly, Schedule F, Part 3, column 10 ($258) should reconcile to Schedule P – Part 1, column 18 ($258), since the NAIC Annual Statement Instructions require column 10 of Schedule F, Part 3 to exclude Adjusting and Other expenses.
- The total in Schedule F, Part 3, column 12 ($503) should reconcile to the sum of the totals in columns 20 and 22 of Schedule P, Part 1 ($503) .[64]

Even if the company does participate in intercompany pooling, the recoverables on known case and IBNR loss reserves should match columns 3 (reported losses recoverable from authorized, unauthorized

[63] Any differences are due to rounding within the Annual Statement for Fictitious Insurance Company.
[64] ibid.

and certified reinsurers) and 7 (IBNR losses on reinsurance ceded) of the Underwriting and investment Exhibit Part 2A.

Note that Part 3 provides IBNR reserves, as these are amounts determined and recorded by the reporting entity. Recall that Part 1 does not provide IBNR. Part 1 provides case reserve amounts reported by the assuming company from the ceding company. While the ceding company may report IBNR to the assuming company, it is the assuming company's responsibility to book what it believes to be its best estimate.

Column 13 represents the amount of unearned premium that will be ceded to an insurance company's reinsurers ($920; $000 omitted). This should equal to the parenthetical amount on page 3, line 9 of the balance sheet ($920,000), which provides the reduction to gross unearned premium for the amount ceded. This is a contra liability to the ceding company. It should also reconcile directly to the amount in item (1) within the "Reinsurance" note of the Notes to Financial Statements titled "Reinsurance Assumed and Ceded" (shown in whole dollars; Note 23C of the 2018 Annual Statement).

Column 14 is similar to Schedule F, Part 1, column 9 (contingent commissions payable), but column 14 is from the view point of the reporting entity as a ceding company (reinsured) as opposed to the reporting entity as the reinsurer. Schedule F, Part 3, column 14 represents the amount of contingent commissions receivable from the reporting entity's reinsurers. The amount in column 14 ($11; $000 omitted) should reconcile to item (2) within the "Reinsurance" note of the Notes to Financial Statements titled "Reinsurance Assumed and Ceded" (shown in whole dollars; Note 23C of the 2018 Annual Statement), which provides the amount of additional or return commission contingent upon loss experience or other forms of profit-sharing arrangement under the reporting entity's existing reinsurance contracts. In the case of Fictitious, this amount is positive, which means that Fictitious expects to receive additional commission from the companies it cedes business to (specifically Good Reinsurer and Slightly Overdue Reinsurer) as a result of favorable loss experience. However, the amount can also be negative, which would mean that the reinsurer's experience has been worse than anticipated under the contract and the reporting entity is expected to return some of the commission already received.

Column 15 provides a sum of reinsurance recoverables, whether on paid (an asset) or unpaid losses (a reduction to liabilities), a reduction to unearned premiums, or contingent commissions receivable. Column 16 identifies amounts in dispute that are included in column 15. Amounts in dispute are those for which the reinsurer has disputed amounts due through formal written notification, arbitration or litigation.

*Reinsurance payable*

Columns 17 and 18 provide other amounts payable by the insurance company to the reinsurer. All other commissions receivable that are not included in column 14 are netted with ceded balances payable in column 17. Column 17 ($440; $000 omitted) should reconcile to page 3, line 12, "Ceded reinsurance premiums payable (net of ceding commissions) ($440,000). Amounts in column 18 ($0) represent

miscellaneous liabilities owed to the reinsurer under the ceded contracts, excluding funds held by the company under the terms of the contracts with its reinsurers. Funds held are provided for separately in column 20.

Column 19 ($11,061; $000 omitted) represents the net amount recoverable from reinsurers and is equal to column 15 reduced by columns 17 and 18.

*Funds held*

Column 20 provides the liability for funds held by company under reinsurance treaties ($170; $000 omitted) and reconciles to page 3, line 13 ($170,000). This provision is the mirror image of that reported by the reinsurer in a transaction, as described in Part 1. It is used by the reporting entity to protect balances due from the reinsurer under the terms of the reinsurance contract. As we will see in the remainder of Schedule F, Part 3, the liability for funds held enables the insurance company to mitigate its liability for unauthorized, certified and overdue authorized reinsurance.

*Credit Risk on Ceded Reinsurance (columns 21 through 36)*

This section of Part 3 is new in 2018. The information reported in this section is not only used in the calculation of the provision for reinsurance, but it is also used in the calculation of the credit risk charge for reinsurance recoverables for RBC purposes. The calculation is performed on reinsurance balances receivable on reinsurance ceded to non-affiliated companies. Cessions to state mandated residual market mechanisms, the National Council on Compensation Insurance, Federal Insurance Programs (e.g., National Flood Insurance Program), and U.S. parents, subsidiaries and affiliates are exempt from this charge and therefore excluded from the calculation.

The amount of the credit risk charge is dependent upon whether the reinsurance recoverables are collateralized or not and the financial strength of the reinsurers. Therefore, the credit risk charge is calculated separately for collateralized and uncollateralized recoverables in columns 35 and 36, respectively.

The financial strength of the reinsurers is determined based on the current rating received from an approved rating agency as outlined in the table below taken from the 2018 NAIC Annual Statement Instructions.

TABLE 22

| | Reinsurer Designation Equivalent Category | | | | | | |
|---|---|---|---|---|---|---|---|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Description | Secure 1 | Secure 2 | Secure 3 | Secure 4 | Secure 5 | Vulnerable 6 or Unrated Unauthorized Reinsurers | Unrated Authorized Reinsurers |
| Best | A++ | A+ | A | A- | B++, B+ | B, B-, C++, C+, C, C-, D, E, F | ..... |
| S&P | AAA | AA+, AA, AA- | A+, A | A- | BBB+, BBB, BBB- | BB+, BB, BB-, B+, B, B-, CCC, CC, C, D, R | ..... |
| Moody's | Aaa | Aa1, Aa2, Aa3 | A1, A2 | A3 | Baa1, Baa2, Baa3 | Ba1, Ba2, Ba3, B1, B2, B3, Caa, Ca, C | ..... |
| Fitch | AAA | AA+, AA, AA- | A+, A | A- | BBB+, BBB, BBB- | BB+, BB, BB-, B+, B, B-, CCC, CC, C, D, R | ..... |

Table 22 provides a mapping of the current financial strength rating to an equivalent designation category used for purposes of applying the applicable credit risk-based capital charge for collateralized and uncollateralized recoverables as provided in Tables 23 and 24 below from the 2018 Annual Statement Instructions. The equivalent designation category is provided in column 34 of Part 3 (Reinsurance Designation Equivalent).

TABLE 23

Credit Risk Charge on Collateralized Recoverables

| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Factor | 3.6% | 4.1% | 4.8% | 5.0% | 5.0% | 5.0% | 5.0% |

TABLE 24

Credit Risk Charge on Uncollateralized Recoverables

| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Factor | 3.6% | 4.1% | 4.8% | 5.3% | 7.1% | 14.0% | 10.0% |

The calculation of credit risk for RBC purposes is offset by the liability that has been established for purposes of the reinsurance penalty (Provision for Reinsurance) in the Annual Statement (Page 3, Line 16). Therefore, before application of the credit risk charge, the reinsurance recoverables in column 15 are reduced by the Schedule F penalty provided in column 27 (equal to the Provision for Reinsurance in column 78) to produce column 28, the total amount recoverable from reinsurers less any applicable

reinsurance penalty. Column 28 is multiplied by 120% to stress the recoverable in column 29. The total of reinsurance payable and funds held (total of columns 17 plus 18 plus 20, but not in excess of the stressed recoverable in column 29) are applied as offsets to arrive at the stressed net recoverable in column 31. Based on the Reinsurer Designation Equivalent in column 34, the credit risk charge on uncollateralized recoverables (provided in Table 24) is applied to the stressed net recoverable net of collateral offsets provided in column 33 to arrive at the credit risk on uncollateralized recoverables in column 36. Credit risk on collateralized recoverables in column 35 is determined by applying the credit risk charge on collateralized recoverables (provided in Table 23) to total collateral in column 32 (columns 21 plus 22 plus 24, not in excess of the stressed net recoverable in column 31).

Note for purposes of calculating the reinsurance credit risk charge, reinsurance recoverables are reduced by IBNR for reinsurers with Special Code "4" indicated in column 5. Recall, Special Code "4" designates those reinsurers with IBNR loses on contracts in force prior to July 1, 1984 that are exempt from the Provision for Reinsurance.

*Aging of Ceded Reinsurance (columns 37 through 53)*

Columns 37 through 53 of Part 3 comprise the section on the "Aging of Ceded Reinsurance" This section provides a breakdown by age of the paid loss and LAE amounts recoverable from the insurance company's reinsurers that are shown in columns 7 (reinsurance recoverable on paid loss) and 8 (reinsurance recoverable on paid LAE) of Schedule F, Part 3.

Paid loss and LAE recoverables are provided in the following age categories:

- Current (column 37)
- 1 to 29 days (column 38)
- 30 to 90 days (column 39)
- 91 to 120 days (column 40)
- Over 120 days (column 41)

The total amount of paid loss and LAE recoverable that is overdue (columns 38 through 41) is provided in column 42. The total amount of paid loss and LAE recoverable that is due (current in column 37 plus overdue in column 42) is provided in column 43. The amount in column 43 ($426 in total; $000 omitted) reconciles to the amount in column 7 (recoverable on paid loss) plus column 8 (recoverable on paid LAE) in Schedule F, Part 3 ($426 + $0 = $426 in total; $000 omitted) and Page 2, line 16.1 (amounts recoverable from reinsurers; $426,000) of the Annual Statement. As stated previously, paid loss and LAE recoverables are assets of the reporting entity.

According to the NAIC Annual Statement Instructions, the age of the recoverable is based on the following:

- The terms of the reinsurance contract as to when claims are to be paid by the reinsurer, if specified

- The terms of the reinsurance contract as to when claims are to be reported by the insurance company to the reinsurer, if specified
  Or
- The date when the amount recoverable exceeds $50,000 for a particular reinsurer and is entered in the insurance company's financial accounts as a paid recoverable

If the amount recoverable is less than $50,000, and the aforementioned paid/reported dates are not specified in the contract, then the recoverable is reported in column 37 as currently due.

Note that recoverables from mandatory pools and associations are reported in column 37 as currently due.

Columns 49 through 50 provide percentages of the overdue balances to total amounts due. Column 49 provides the percentage overdue relative to the total due (column 42 divided by column 43), column 50 provides the percentage overdue greater than 90 days and not in dispute (column 47 divided by columns 46 plus 48), and column 51 provides the percentage overdue greater than 120 days to the total due (column 41 divided by column 43). These percentages are used in the calculation of the provision for reinsurance.

*Provision for Reinsurance for Certified Reinsurance (columns 54 through 69)*

In 2012, the NAIC added a third facet to the "authorized" and "unauthorized" categorization of reinsurers in Schedule F, called "certified." This resulted in the addition of a new Part 6 to Schedule F, shifting the former Parts 6 through 8 to Parts 7 through 9, respectively. In 2018, numerous individual parts used to derive the provision for reinsurance were consolidated into a single new Part 3 within Schedule F, with columns 54 through 69 being specific to certified reinsurers.

Certified reinsurers are non-U.S. reinsurers domiciled in a jurisdiction designated by the NAIC as a Qualified Jurisdiction (i.e., Bermuda, France, Germany, Ireland, Japan, Switzerland and the United Kingdom) that would have been categorized as unauthorized prior to 2012, but have applied for and attained certification from the reporting entity's domiciliary state as a certified reinsurer. A non-U.S. reinsurer that is not certified is required to post 100% collateral for its U.S. claims. Once a reinsurer is certified, it is allowed to provide a reduce amount of collateral for its U.S. claims. In attaining certification, consideration is made for the reinsurer's jurisdiction, financial position, amount of capital and surplus, regulatory history, financial strength rating(s) from[65] recognized rating agency(ies), among other factors. Once certified, the reinsurer is given a rating that ranges from 1 to 6, called the Certified Reinsurer Rating. A reinsurer with a rating of 1 is considered most secure from a financial strength perspective; a reinsurer with a rating of 6 is considered vulnerable.

[65] The list can be found at this link: https://content.naic.org/sites/default/files/inline-files/committees_e_reinsurance_qualified_jurisdictions_list_1.pdf, and the designation was initially effective on January 1, 2015

The rating defines the amount of collateral that the reinsurer is required to post with the reporting entity. The more secure the certified reinsurer, the less collateral required. For example, a reinsurer with a rating of 1 is not required to post any collateral; a reinsurer with a rating of 6 is required to post 100% of total recoverable due to the reporting entity in collateral.[66] The rating and collateral are used in the calculation of the provision for reinsurance in column 77 of Schedule F, Part 3.

The obvious benefits of this new "certified" category are twofold: (1) the reporting entity does not get "penalized" as much as an unauthorized reinsurer in the provision for reinsurance, and (2) the reinsurer does not have to post as much security with the ceding company.

The provision for certified reinsurance comprises two parts, one coming from column 64 and the other from column 69. Column 64 provides the provision for reinsurance ceded to certified reinsurers due to collateral deficiency. This provision is equal to total recoverables from certified reinsurers offset by any corresponding payables (from Schedule F, Part 3, column 19) in excess of the amount of credit permitted for recoverables based on the Certified Reinsurer Rating (column 63). The amount of credit permitted is based on the amount of collateral actually posted by the reinsurer relative to the amount of collateral required based on its Certified Reinsurer Rating. For example, if a certified reinsurer has a rating of 6, then the reinsurer is required to post 100% of the recoverable in collateral. However, if the reinsurer only posts 75% of the total collateral required, then the reporting entity would record a provision for reinsurance in Section 1 equal to 25% of the recoverable. The 25% represents the deficiency in collateral; 75% represents the amount of credit permitted.

Column 69 of Part 3 provides the provision for overdue reinsurance ceded to certified reinsurers. As with authorized and unauthorized reinsurers, overdue reinsurance ceded is defined as recoverable on paid losses and LAE more than 90 days overdue per columns 40 and 41.

As we will see, the provision for overdue certified reinsurers is calculated similarly to the provision for authorized reinsurance, in that the provision is greater for slow payers (i.e., those certified reinsurers where the percent of recoverables on paid losses and LAE more than 90 days overdue is 20% or more), than non-slow payers. In the case of slow payers, instead of 20% of the recoverables on paid losses and LAE, the maximum amount of the recoverables on paid losses and LAE and the net unsecured recoverable for which credit is allowed is considered. In either case, the provision is not to excess the amount of credit allowed for net recoverables per column 63.

*Total Provision for Reinsurance (columns 70 through 78)*

As explained in the "Overview" section of this chapter, the provision for reinsurance is a minimum reserve that is calculated under SAP to reflect an estimate of recoveries under the reporting entity's reinsurance contract(s) that it will not be able to collect. The provision is provided in column 78 and is the sum of the following three main elements:

[66] A rating of Secure-2 requires 10%; Secure-3 requires 20%; Secure-4 requires 50%; and Secure-5 requires 75%.

1. Provision for authorized reinsurance in column 75, which emanates from overdue balances.
2. Provision for unauthorized reinsurance in column 76, which comprises two components, the sum of columns 71 and 72:
    - Column 71 provides the provision due to collateral deficiency.
    - Column 72 provides the provision due to overdue balances.
3. Provision for certified reinsurers in column 77, which similarly comprises two components, the sum of columns 64 and 69:
    - Column 64 provides the provision due to collateral deficiency.
    - Column 69 provides the provision due to overdue balances.

For Fictitious, the components of the provision for reinsurance are as follows:

TABLE 25

| Column | Provision for Reinsurance (USD in 000) | Total |
|---|---|---|
| 75 | 1. Provision for Authorized Reinsurance | 46 |
| 76 | 2. Provision for Unauthorized Reinsurance | 224 |
| 77 | 3. Provision for Certified Reinsurance | 13 |
| 78 | Total Provision for Reinsurance | 283 |

Details underlying the computation of each of these three elements is provided below.

1. Provision for Amounts Ceded to Authorized Reinsurers in column 75

An authorized reinsurer is one that is either licensed or accredited in the ceding insurance company's state of domicile or domiciled in a state that employs standards regarding credit for reinsurance substantially similar to those of the ceding insurance company's state of domicile and is therefore regulated in the U.S. and subject to minimum capital and surplus requirements. As a result, there is less concern about the reinsurer's ability to pay unless the reinsurer is late in making payments or has disputed the ceded balance. Therefore, for authorized reinsurers, the provision for reinsurance emanates from overdue balances, including amounts in dispute.

For purposes of calculating the provision for overdue authorized reinsurance, "overdue" reinsurance is defined as the amount of paid loss and LAE recoverable over 90 days past due for reasons other than dispute between the insurance company and the reinsurer.

The provision for authorized reinsurance is equal to the sum of column 73 and 74. The provision that emanates from column 73 comprises overdue authorized reinsurance that represents *less than 20%* of the total recoverable on paid loss and LAE (plus amounts received by the insurance company from that reinsurer in the prior 90 days). For these reinsurers, most of the payments are less than three months late. This of course is not as great of a concern from a collectability standpoint as is the situation where the majority of the amount overdue from a reinsurer is greater than 90 days (i.e., the provision for "slow payers" derived in column 74); the likelihood of the reinsurer reimbursing the insurance company is less as time goes on.

The provision for overdue authorized reinsurance in column 73 is calculated as (1) 20% of the amount of reinsurance recoverable on paid losses and LAE more than 90 days overdue, plus (2) 20% of amounts in dispute excluded from the recoverable on paid losses and LAE more than 90 days overdue for those authorized reinsurers where the amount overdue represents less than 20% of the total. This is equal to 20% of the amount reported in column 47 plus 20% of the amount reported in column 45.

For Fictitious Insurance Company, "Good Reinsurer" and "Slightly Overdue Reinsurer" are the only authorized reinsurers for which loss and LAE payments are overdue in 2018 *and* for which the overdue amount represents *less than 20%* the total recoverable on paid, as indicated by a "YES" in column 52.

Column 74 provides the provision for what Sholom Feldblum refers to as "slow-paying" [67] authorized reinsurers (i.e., authorized reinsurers where the amount of paid loss and LAE recoverable more than 90 days overdue represents *greater than or equal to 20%* of the total recoverable on paid losses and LAE). Column 74 is calculated as 20% of the maximum of (1) reinsurance recoverable on all items less funds held and collateral in column 26 and (2) the amount recoverable on paid losses and LAE greater than 90 days past due in columns 40 and 41.

Similar to column 73, the provision for overdue authorized reinsurers in column 74 considers reinsurance recoverables on paid loss and LAE greater than 90 days overdue. However, column 74 also considers all recoverables from the reinsurer, less allowable offsets. We note that the reinsurance recoverables would include amounts in dispute. In column 74, the greater of all items recoverable less offsets, and paid recoverables more than 90 days due, is used in the calculation of the provision. In other words, slow payers are penalized in the calculation of the provision for authorized reinsurance.

As indicated in column 52 by a "NO", Fictitious has two slow-paying reinsurers: "Overdue Reinsurer" and "Foreign Authorized."

The following table details the first step in the calculation of the provision of authorized reinsurance for Fictitious Insurance Company, the determination of whether amounts overdue are less than 20% of total recoverables on paid losses and LAE in column 52.

[67] Feldblum, S., "Reinsurance Accounting: Schedule F," CAS Exam Study Note, April 2003, 8th Edition, page 22.

TABLE 26

| Authorized Reinsurance (USD in 000) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do overdue amounts represent less than 20% of total recoverables on paid losses and LAE? | | | | | | | |
| **Column** | | **Good Reinsurer** | **Overdue Reinsurer** | **Slightly Overdue Reinsurer** | **Pooling Company** | **Foreign Authorized** | **Source** |
| 52 | Do overdue amounts represent less than 20% of total recoverables on paid losses and LAE (plus amounts received in prior 90 days)? | YES | NO | YES | YES | NO | If Column 50 is less Than 20%, then "Yes" and go to Column 73, else "No" and go to Column 74 |
| 50 | Percentage of Amounts More Than 90 Days Overdue Not in Dispute | 0.0% | 100.0% | 8.3% | 0.0% | 23.5% | Column 47 / [Column 46 + 48] |
| 46 | Total Recoverable on Paid Losses & LAE Amounts Not in Dispute | 258 | 10 | 60 | - | 34 | Columns 43 - Column 44 |
| 47 | Recoverable on Paid Losses & LAE Over 90 Days Past Due Amounts Not in Dispute | - | 10 | 5 | - | 8 | Columns 40 + 41 - 45 |
| 48 | Amounts Received Prior 90 Days | - | - | - | - | - | Input by Company |
| *Reinsurance Recoverable on Paid Losses and Paid Loss Adjustment Expenses* | | | | | | | |
| 37 | Current | 248 | - | 54 | - | 26 | Input by Company |
| 38 | 1 - 29 days past due | 10 | - | - | - | - | Input by Company |
| 39 | 30 - 90 days past due | - | - | 5 | - | - | Input by Company |
| 40 | 91 - 120 days past due | - | - | 5 | - | 8 | Input by Company |
| 41 | Over 120 days past due | - | 10 | - | - | - | Input by Company |
| 42 | Total Overdue | 10 | 10 | 10 | - | 8 | Columns 38 + 39 + 40 + 41 |
| 43 | Total Due | 258 | 10 | 64 | - | 34 | Columns 37 + 42; equals Schedule F, Part 3, Columns 7 + 8 |
| 44 | Total Recoverable on Paid Losses & LAE Amounts in Dispute Included in Column 43 | - | - | 4 | - | - | Input by Company |
| 45 | Recoverable on Paid Losses & LAE Over 90 Days Past Due Amounts in Dispute Included in Columns 40 & 41 | - | - | - | - | - | Input by Company |

Once column 52 is determined, the calculation of the provision for reinsurance for authorized reinsurance is separately determined for those overdue authorized reinsurers for which column 52 is a "yes" and those for which column 52 is a "no", as displayed below for Fictitious.

| Provision for Authorized Reinsurance (USD in 000) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Column | | Good Reinsurer | Overdue Reinsurer | Slightly Overdue Reinsurer | Pooling Company | Foreign Authorized | Source |
| 75 | Provision for Authorized Reinsurance | - | 43 | 1 | - | 2 | Columns 73 + 74; if less than 0, enter 0 |
| *Provision for Overdue Balances and Amounts in Dispute* | | | | | | | |
| 73 | Provision for overdue authorized representing less than 20%of total recoverables on paids (plus amounts received in prior 90 days) | - | - | 1 | - | - | If Column 52 = "YES", 20%of Column 47 + 20%of Column 45; otherwise = 0 |
| 74 | Provision for "slow payers" (overdue authorized representing greater than or equal to 20%of total recoverables on paids (plus amounts received in prior 90 days)) | - | 43 | - | - | 2 | If Column 52 = "No", Greater of 20%of Column 26 and 20% of [Columns 40 + 41]; otherwise = 0 |
| 26 | Net Recoverable Net of Funds Held & Collateral | 4,137 | 217 | 2,779 | 617 | - | Column 15 - Column 25, unless Column 5 = Special Code 4, then reduce Column 15 by Columns 11 + 12 in this calculation |
| 15 | Reinsurance Recoverable on paid, known case and IBNR loss and LAE, unearned premiums and contingent commissions | 4,137 | 745 | 2,873 | 628 | 2,411 | Coumns 7 through 14 Totals |
| 25 | Total Funds Held, Payables & Collateral | - | 528 | 94 | 11 | 2,411 | Minimum of [Column 15 and sum of Columns 17 + 18 + 20 + 21 + 22 + 24], unless Column 5 = Special Code 4, then reduce Column 15 by Columns 11 + 12 in this calculation |
| *Reinsurance Payable* | | | | | | | |
| 17 | Ceded Balances Payable | - | 13 | 94 | 11 | 255 | Input by Company |
| 18 | Other Amounts Due to Reinsurers | - | - | - | - | - | Input by Company |
| *Funds Held* | | | | | | | |
| 20 | Funds Held by Company Under Reinsurance Treaties | - | - | - | - | - | Input by Company |
| *Collateral* | | | | | | | |
| 21 | Multiple Beneficiary Trusts | - | - | - | - | - | Input by Company |
| 22 | Letters of Credit | - | 515 | - | - | 2,500 | Input by Company |
| 24 | Single Beneficiary Trusts & Other Allowable Collateral | - | - | - | - | - | Input by Company |

2. Provision for unauthorized reinsurance in column 76

The provision for unauthorized reinsurance requires that the insurance company establish a liability to protect against the inability to collect on amounts due from a reinsurer not authorized or certified by the domiciliary state of the insurance company. The liability emanates from two sources:

- Collateral deficiency (column 26), which is defined as the total amount of reinsurance recoverables, including amounts in dispute, offset by funds held, payables and collateral (i.e., the unsecured recoverable in column 26); and

- Overdue balances (i.e., 20% of column 47) and amounts in dispute (20% of column 16)

To put it another way, the liability is equal to total recoverable from unauthorized reinsurers, reduced for allowable offsets only to the extent that there are no amounts in dispute or more than 90 days due (and not in dispute). Otherwise, the allowable offsets are reduced by 20% of amounts due from late payers and 20% of amounts recoverable that are in dispute. Late payers and those that dispute coverage are more likely not to pay than those unauthorized reinsurers that have a history of paying on time and where no amounts are currently in dispute. For each reinsurer, the liability is capped at the total amount of reinsurance recoverable from that reinsurer.

The Appointed Actuary comments on the collectability of reinsurance in the Statement of Actuarial Opinion. However, a large provision for reinsurance would not always mean there is a collectability issue. Just because a reinsurer is not authorized (or certified) to transact business in the company's domiciliary state doesn't mean that the reinsurer is not viable and will not pay claims owed under the terms of the reinsurance contract.

The following provides the calculation of the Provision for Unauthorized Reinsurers included in Schedule F, Part 3, column 76 of the 2018 Annual Statement for Fictitious Insurance Company.

TABLE 27

| Provision for Unauthorized Reinsurance (USD in 000) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Reinsurer | | | | | |
| Column | | A | B | C | D | E | Source |
| 76 | Provision for Unauthorized Reinsurance | 22 | 75 | 126 | - | 1 | Minimum of [Column 15 and sum of Columns 71 + 72]; if less than 0, enter 0 |
| 71 | Provision for Reinsurance Due to Collateral Deficiency | 21 | 75 | 116 | - | 1 | Column 26 |
| 72 | Provision for Reinsurance Due to Overdue Balances and Amounts in Dispute | 1 | 0 | 10 | - | - | Column 70 + 20% of Column 16 |
| | | | | | | | |
| 71 | Provision for Reinsurance Due to Collateral Deficiency | 21 | 75 | 116 | - | 1 | Column 26 |
| 26 | Net Recoverable Net of Funds Held & Collateral | 21 | 75 | 116 | - | 1 | Column 15 - Column 25, unless Column 5 = Special Code 4, then reduce Column 15 by Columns 11 + 12 in this calculation |
| 5 | Special Code | | | | 4 | | Input by Company |
| 11 | IBNR Loss Reserves | 16 | 80 | 58 | 16 | 80 | |
| 12 | IBNR LAE Reserves | 4 | 22 | 22 | 4 | 22 | |
| 15 | Reinsurance Recoverable on paid, known case and IBNR loss and LAE, unearned premiums and contingent commissions | 42 | 171 | 149 | 35 | 171 | Columns 7 through 14 Totals |
| 25 | Total Funds Held, Payables & Collateral | 21 | 96 | 33 | 15 | 170 | Minimum of [Column 15 and sum of Columns 17 + 18 + 20 + 21 + 22 + 24], unless Column 5 = Special Code 4, then reduce Column 15 by Columns 11 + 12 in this calculation |
| *Reinsurance Payable* | | | | | | | |
| 17 | Ceded Balances Payable | 1 | 3 | 3 | 1 | 2 | Input by Company |
| 18 | Other Amounts Due to Reinsurers | - | - | - | - | - | Input by Company |
| *Funds Held* | | | | | | | |
| 20 | Funds Held by Company Under Reinsurance Treaties | 20 | - | 20 | 30 | 100 | Input by Company |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Collateral* | | | | | | | |
| 21 | Multiple Beneficiary Trusts | - | - | 10 | - | - | Input by Company |
| 22 | Letters of Credit | - | 93 | - | - | 68 | Input by Company |
| 24 | Single Beneficiary Trusts & Other Allowable Collateral | - | - | - | - | - | Input by Company |
| 72 | Provision for Reinsurance Due to Overdue Balances and Amounts in Dispute | 1 | 0 | 10 | - | - | Column 70 + 20% of Column 16 |
| 70 | 20% of Recoverable on Paid Losses & LAE Over 90 Days Past Due Amounts Not in Dispute | 1 | 0 | - | - | - | 20% of Column 47 |
| 47 | Recoverable on Paid Losses & LAE Over 90 Days Past Due Amounts Not in Dispute | 5 | 1 | - | - | - | Columns 40 + 41 - 45 |
| *Reinsurance Recoverable on Paid Losses and Paid Loss Adjustment Expenses* | | | | | | | |
| 40 | 91 - 120 days past due | 5 | 1 | - | - | - | Input by Company |
| 41 | Over 120 days past due | - | - | - | - | - | Input by Company |
| 45 | Recoverable on Paid Losses & LAE Over 90 Days Past Due Amounts in Dispute Included in Columns 40 & 41 | - | - | - | - | - | Input by Company |
| 16 | Amount in Dispute Included in Column 15 | - | - | 50 | - | - | Input by Company |

3. Provision for certified reinsurers in column 77

As discussed earlier in this chapter, the provision for certified reinsurance is calculated in a separate, dedicated section of Part 3, in columns 54 through 69, and emanates from two sources:

- Collateral deficiency (column 64), which is defined as the total amount of reinsurance recoverables, including amounts in dispute, net of reinsurance payables and the amount of credit allowed (column 19 minus column 63); and
- Overdue balances (column 69) which is calculated as the greater of 20% of recoverables on paid losses and LAE, including amounts in dispute (i.e., 20% of column 47 and 20% of column 45). For "slow payers", the provision is modified to be at least equal to 20% of the net unsecured recoverable for which credit is allowed (column 68 = 20% * column 67 = 20% * (column 63 minus column 66)). In either case, the provision should not exceed the amount of credit allowed for net recoverables in column 63.

The following provides the calculation of the Provision for Certified Reinsurers included in Schedule F, Part 3, column 77 of the 2018 Annual Statement for Fictitious Insurance Company.

TABLE 28

| Provision for Certified Reinsurance (USD in 000) | | | | | |
|---|---|---|---|---|---|
| **Column** | | **ABC Reins LTD** | **DEF Reins LTD** | **GHI Reins LTD** | **Source** |
| 77 | Provision for Certified Reinsurance | 9 | 4 | - | Columns 64 + 69; if less than 0, enter 0 |
| 64 | Provision for Reinsurance Due to Collateral Deficiency | 9 | - | - | Greater of Column 19 - Column 63 and 0 |
| 69 | Provision for Reinsurance Due to Overdue Balances and Amounts in Dispute | - | 4 | - | Greater of Columns 62 + 65 and Column 68, not to exceed Column 63 |
| | | | | | |
| 64 | Provision for Reinsurance Due to Collateral Deficiency | 9 | - | - | Greater of Column 19 - Column 63 and 0 |
| 19 | Net Amount Recoverable From Reinsurers | 84 | 41 | (6) | Columns 15 - (17 + 18) |
| 15 | Reinsurance Recoverable on paid, known case and IBNR loss and LAE, unearned premiums and contingent commissions | 121 | 52 | 3 | Columns 7 through 14 Totals |
| *Reinsurance Payable* | | | | | |
| 17 | Ceded Balances Payable | 37 | 11 | 9 | Input by Company |
| 18 | Other Amounts Due to Reinsurers | - | - | - | Input by Company |
| 63 | Amount of Credit Allowed for Net Recoverables | 75 | 41 | - | Column 57 + [Column 58 * Column 61] |
| 57 | Catastrophe Recoverables Qualifying for Collateral Deferral | - | - | - | Input by Company |
| 58 | Net Recoverables Subject to Collateral Requirements for Full Credit | 84 | 41 | (6) | Column 19 - Column 57 |
| 61 | Percent Credit Allowed on Net Recoverables Subject to Collateral Requirements | 89 | 100 | - | Column 60 / Column 56, not to exceed 100% |
| 60 | Percent of Collateral Provided for Net Recoverables Subject to Collateral Requirements | 17.9 | 151.2 | - | [Columns 20 + 21 + 22 + 24] / Column 58 |
| 56 | Percent Collateral Required for Full Credit (0% through 100%) | 20.0 | 10.0 | 10.0 | |
| *Funds Held* | | | | | |
| 20 | Funds Held by Company Under Reinsurance Treaties | - | - | - | Input by Company |

| | | | | | |
|---|---|---|---|---|---|
| *Collateral* | | | | | |
| 21 | Multiple Beneficiary Trusts | - | 40 | - | Input by Company |
| 22 | Letters of Credit | 15 | 22 | - | Input by Company |
| 24 | Single Beneficiary Trusts & Other Allowable Collateral | - | - | - | Input by Company |
| 72 | Provision for Reinsurance Due to Overdue Balances and Amounts in Dispute | - | 4 | - | Greater of Columns 62 + 65 and Column 68, not to exceed Column 63 |
| 62 | 20% of Recoverable on Paid Losses & LAE Over 90 Days Past Due Amounts in Dispute | - | - | - | 20% of Column 45 |
| 65 | 20% of Recoverable on Paid Losses & LAE Over 90 Days Past Due Amounts Not in Dispute | - | 4 | - | 20% of Column 47 |
| 68 | 20% of Amount in Column 67 (for "slow payers") | - | - | - | 20% of Column 67 |
| 45 | Recoverable on Paid Losses & LAE Over 90 Days Past Due Amounts in Dispute Included in Cols. 40 & 41 | - | - | - | Input by Company |
| 47 | Recoverable on Paid Losses & LAE Over 90 Days Past Due Amounts Not in Dispute | - | 20 | - | Columns 40 + 41 - 45 |
| 67 | Net Unsecured Recoverable for Which Credit is Allowed (for "slow payers") | - | - | - | Column 63 - Column 66, if Column 52 = "No" |
| 66 | Total Collateral Provided (for "slow payers") | - | 41 | - | Columns 20 + 21 + 22 + 24; not to exceed Column 63; if Column 52 = "No" |
| *Reinsurance Recoverable on Paid Losses and Paid Loss Adjustment Expenses* | | | | | |
| 40 | 91 - 120 days past due | - | 20 | - | Input by Company |
| 41 | Over 120 days past due | - | - | - | Input by Company |
| 45 | Recoverable on Paid Losses & LAE Over 90 Days Past Due Amounts in Dispute Included in Columns 40 & 41 | - | - | - | Input by Company |

The final provision for reinsurance in column 78 of Schedule F, Part 3, which is equal to the amount recorded in Liabilities, Surplus and Other Funds on Page 3, line 16 ($283,000) of the Annual Statement, is equal to the sum of the following three items:

TABLE 29 (same as TABLE 25)

| Column | Provision for Reinsurance (USD in 000) | Total |
|---|---|---|
| 75 | 1. Provision for Authorized Reinsurance | 46 |
| 76 | 2. Provision for Unauthorized Reinsurance | 224 |
| 77 | 3. Provision for Certified Reinsurance | 13 |
| 78 | Total Provision for Reinsurance | 283 |

SCHEDULE F — PART 4: ISSUING OR CONFIRMING BANKS FOR LETTERS OF CREDIT FROM SCHEDULE F, PART 3 ($000 OMITTED)

Schedule F, Part 4 is for information purposes. It provides a listing of the issuing or confirming banks for letters of credit as collateral reported in Schedule F, Part 3, column 22. Confirming banks are those that provide a guarantee on a letter of credit such that the confirming bank will pay if the original bank issuing the letter of credit bank does not.

There are 5 columns in Part 4:

Column (1): provides the issuing or confirming bank reference number.

Column (2): identifies by a "1", "2" or "3" whether single, syndicated or multiple letters of credit, respectively, are provided as collateral. Syndicated letters of credit are those where one bank acts as an agent for a group of banks issuing the letter of credit.

Column (3): provides the American Bankers Association (ABA) Routing Number for the letter of credit issuing or confirming bank.

Column (4): provides the name of the issuing or confirming bank.

Column (5): provides the amount of the letter of credit, the sum of which should equal the total of Schedule F, Part 3, column 22.

SCHEDULE F — PART 5: INTERROGATORIES FOR SCHEDULE F, PART 3 ($000 OMITTED)

Schedule F, Part 5 provides interrogatories for Schedule F, Part 3. The interrogatories include two tables with more detailed information. These two tables are particularly relevant from a regulatory perspective.

The first table identifies the five largest commission rates included in the cedant's reinsurance treaties for those contracts where ceded premium is in excess of $50,000.[68] The top five provisional commission rates are considered in conjunction with column 14 (contingent commissions receivable) and the

[68] According to the NAIC Annual Statement Instructions, the five largest should exclude mandatory pools and joint underwriting associations.

aforementioned Note to the Financial Statements on reinsurance assumed and ceded. The purpose is to identify companies that may be using reinsurance as a means to conceal high operating leverage. As we shall see in Appendix I of this publication, one purpose of the NAIC's Insurance Regulatory Information System (IRIS) ratios is to identify companies that may be taking on more business and more risk than they can handle relative to their surplus. Specifically, IRIS Ratio 2 provides the ratio of net written premium to policyholders' surplus. Unusual values triggering regulatory attention are those in excess of 300% on a net basis. The 300% ratio on a net basis corresponds to the age-old generally accepted benchmark that insurers remain within the 3-to-1 range in terms of writings relative to surplus.

Companies growing rapidly may use reinsurance as a means to reduce pressure on its surplus. This is known as "surplus relief." All else being equal, an increase in the amount of ceded premiums will reduce the amount of net premiums and reduce the premium to surplus ratio (IRIS Ratio 2). This is perfectly legitimate; the purpose of reinsurance is to spread and manage insurance risk.

For example, consider a company that has $150 million of direct written premium and surplus of $25 million. The premium-to-surplus ratio is 600%, well above the 300% benchmark. Let's say this company decides to purchase a 30% quota share reinsurance contract with a fixed ceding commission of 35%. The company's net written premium would be:

Direct written premium * (1 – ceding percentage)
= $150 million * (1 – 0.30)
= $105 million.

At the onset of the contract, the company's surplus would grow by the amount of ceding commission:

Direct written premium * ceding percentage * ceding commission
= $150 million * 30% * 35%
= $15.75 million

The resulting surplus would be $40.75 million ($25 million current surplus plus $15.75 million in ceding commission). The purchase of this contract would reduce the company's premium-to-surplus ratio below the 300% "usual" value benchmark, from 600% to 258%.

However, consider the situation where the commission is instead offered on sliding scale basis such that a one-point increase in loss ratio from 65% would result in a one-point decrease in the 35% commission rate. The premium-to-surplus ratio at the onset of this contract would be the same as that under the situation where the commission rate is fixed (258%). However, if the actual loss ratio turns out to be 80%, then the company will have to return $6.75 million of the original $15.75 million in ceding commission. Instead of receiving 35% of ceded premium in commission, the company (reinsured) will end up getting only 20%. If a 20% fixed commission rate was considered at the onset, the premium-to-surplus ratio would have been 309%, triggering an unusual value for IRIS Ratio 2.

Schedule F, Part 5 and the reinsurance Note to the Financial Statements identify reinsurance contracts with high provisional commission rates so that the regulator may investigate these contracts and determine if they are being used to mask high operating leverage.

We note that IRIS Ratio 4 (surplus aid to policyholders surplus) is another statistic that can identify companies that rely heavily on reinsurance for surplus relief. As explained in Appendix I of this publication, IRIS Ratio 4 provides the ratio of surplus aid to policyholders surplus. Surplus aid is the amount of surplus enhancement in the current year attributed to ceding commission (both fixed and contingent) that has been taken into income on ceded unearned premium. Ratios of surplus aid to policyholders surplus in excess of 15% are considered unusual and trigger regulatory scrutiny.

In either of our examples (with the 35% ceding commission being either fixed or provisional), IRIS Ratio 4 would be computed as 39% at the onset of the contract, well in excess of the 15% benchmark.[69] This further illustrates the company's heavy use of reinsurance as surplus relief, masking considerable growth and uncertainty in results.

The second table in Part 5 identifies the five largest reinsurance recoverables reported in column 15 and associated ceded premiums, as well as an indicator as to whether the reinsurer is affiliated with the reporting entity. This table enables the regulator to assess concentration of reinsurance credit risk.

SCHEDULE F — PART 6: RESTATEMENT OF BALANCE SHEET TO IDENTIFY NET CREDIT FOR REINSURANCE

Part 6 of Schedule F provides a summarized form of the balance sheet with adjustments to restate it on a gross of ceded reinsurance basis. That is, Part 6 provides a snapshot of the balance sheet as if the company had no reinsurance protection.

Part 6 is one page and displays the assets followed by the liabilities. Both the assets and liabilities are in a condensed format for ease of presentation and computation. There are three columns, providing balances for each of the following asset and liability line items:

Column 1: As Reported (Net of Ceded)
This provides the amounts included on page 2 of the Annual Statement, which are net of reinsurance.

Column 2: Restatement Adjustments
This provides the adjustments necessary to put the net amounts in column 1 on a gross of reinsurance basis in column 3.

Column 3: Restated (Gross of Ceded)
This is equal to the sum of columns 1 and 2 and shows the corresponding asset and liability figures on a gross of reinsurance basis.

[69] IRIS Ratio 4 is computed as the unearned premium reserve of $45 million multiplied by the 35% ceding commission and divided by policyholders surplus of $40.75 million.

*Adjustments to assets*

The asset side of the balance sheet is generally easier to adjust because there are fewer items that require adjustment. This is because certain items relate to direct or assumed business only, and/or certain items are not impacted by the amounts associated with a company's ceded reinsurance transactions. In general, no adjustment is made to the following asset items within Part 9:

- Cash and invested assets (line 1 of Schedule F, Part 6; line 12 of page 2), as these represent balances that the company has on hand or invested, regardless of its ceded reinsurance
- Premiums and considerations (line 2 of Schedule F, Part 6; line 15 of page 2), as these represent uncollected or deferred balances relating to direct written premiums
- Funds held by or deposited with reinsured companies (line 4 of Schedule F, Part 9; line 16.2 of page 2), as these represent balances for business assumed by the company, not ceded
- Other assets (line 5 of Schedule F, Part 6; representing the balance of page 2 not separately identified), as these represent balances that would not change regardless of ceded reinsurance balances, such as title plants, furniture and electronic data equipment
- Protected cell assets (line 7 of Schedule F, Part 6; line 27 of page 2), as these are not related to ceded reinsurance

The only two lines that are affected by the reinsurance adjustments are line 3, reinsurance recoverable on loss and loss adjustment expense payment, and line 6, net amount recoverable from reinsurers. The adjustment in line 3 is simply a reversal of the amount of reinsurance recoverable on loss and LAE such that the balance gross of reinsurance ceded is $0 for this asset. The adjustment for line 6 is a balancing item such that the total adjustments on the liabilities side of the balance sheet equal those on the asset side.

*Adjustments to liabilities*

With respect to the Liability side of the balance sheet, no adjustment is typically made to the following line items in Part 6:

- Taxes, expense, and other obligations (line 10 of Schedule F, Part 9; lines 4 through 8 of page 3), as these are generally applied to direct writings
- Advance premium (line 12 of Schedule F, Part 6; line 10 of page 3), as this represents balances that the company has received in advance on its direct writings
- Dividends declared and unpaid (line 13 of Schedule F, Part 6; line 11.1 and 11.2 of page 3), as dividends are not affected by the ceded reinsurance balances

- Amounts withheld or retained by company for account of others (line 16 of Schedule F, Part 6; line 14 of page 3), as these balances are not related to ceded reinsurance
- Other liabilities (line 18 of Schedule F, Part 6; representing the balance of the liabilities on page 3 not separately identified), as these are unrelated to ceded reinsurance

Adjustments are made for the following lines:

Line 9: Losses and LAE (lines 1 through 3 of page 3)
These balances are stated net on a company's statutory balance sheet. The adjustment puts the balances on a gross of reinsurance basis. For companies that are not involved in intercompany pooling arrangements, the adjustment equals the ceded case and IBNR figures from Schedule P, Part 1, Summary, total, columns 14, 16, 18, 20 and 22.

Line 11: Unearned premiums (line 9 of page 3)
These balances are stated net on a company's statutory balance sheet. The adjustment puts the balances on a gross of reinsurance basis. The source of the ceded unearned premium reserve is Schedule F, Part 3, column 13, multiplied by 1,000. The ceded balance is also provided within the parenthetical reference on the Liabilities, Surplus and Other Funds page of the Annual Statement (page 3) on line 9.

Line 14: Ceded reinsurance premiums payable (line 12 of page 3)
If ceded reinsurance is ignored, as is the purpose of Part 6, then the company will not have any ceded reinsurance premiums payable. The adjustment reverses the amount in column 1.

Line 15: Funds held by company under reinsurance treaties (line 13 of page 3)
Similarly, if there are no ceded reinsurance treaties, then the company won't have any funds held related to these treaties. The adjustment reverses the amount in column 1.

Line 17: Provision for reinsurance (line 16 of page 3)
This is the Schedule F "penalty," as computed in Schedule F, Part 3. If the company is assumed to have no reinsurance protection in Part 6, then there will be no provision for reinsurance. The adjustment reverses the amount in column 1.

*Surplus*

Surplus remains unadjusted in Part 6, as such, the adjustment amount is shown as "XXX" in column 2 and the amount in column 3 equals that in column 1.

*Totals*

The totals shown in column 1, line 22 of Part 6, balance to the totals shown on line 38 of page 3 of the Annual Statement. The total is equal to the difference between the total assets and total liabilities of the

company. This calculation follows through to column 3, with the new total being on gross of reinsurance basis.

The following provides Schedule F, Part 6 for Fictitious Insurance Company.

TABLE 30

**Schedule F — Part 6**
**Annual Statement for the year 2018 of the Fictitious Insurance Company**
**Restatement of Balance Sheet to Identify Net Credit for Reinsurance**

| | | 1<br>**As Reported (Net of Ceded)** | 2<br>**Restatement Adjustments** | 3<br>**Restated (Gross of Ceded)** |
|---|---|---|---|---|
| **Assets (page 2, Col. 3)** | | | | |
| 1. | Cash and invested assets (Line 12) | 87,825,000 | 0 | 87,825,000 |
| 2. | Premiums and considerations (Line 15) | 7,990,000 | 0 | 7,990,000 |
| 3. | Reinsurance recoverable on loss and loss adjustment expense payments (Line 16.1) | 426,000 | (426,000) | 0 |
| 4. | Funds held by or deposited with reinsured companies (Line 16.2) | 0 | 0 | 0 |
| 5. | Other assets | 3,759,000 | 0 | 3,759,000 |
| 6. | Net amount recoverable from reinsurers | 0 | 10,595,000 | 10,595,000 |
| 7. | Protected cell assets (Line 27) | 0 | 0 | 0 |
| 8. | Totals (Line 28) | 100,000,000 | 10,169,000 | 110,169,000 |
| **Liabilities (page 3)** | | | | |
| 9. | Losses and loss adjustment expenses (Lines 1 through 3) | 51,557,000 | 10,142,000 | 61,699,000 |
| 10. | Taxes, expenses, and other obligations (Lines 4 through 8) | 1,932,000 | 0 | 1,932,000 |
| 11. | Unearned premiums (Line 9) | 11,895,000 | 920,000 | 12,815,000 |
| 12. | Advance premiums (Line 10) | 0 | 0 | 0 |
| 13. | Dividends declared and unpaid (Lines 11.1 through 11.2) | 1,562,000 | 0 | 1,562,000 |
| 14. | Ceded reinsurance premiums payable (net of ceding commissions) (Line 12) | 440,000 | (440,000) | 0 |
| 15. | Funds held by company under reinsurance treaties (Line 13) | 170,000 | (170,000) | 0 |
| 16. | Amounts withheld or retained by company for account of others (Line 14) | 308,000 | 0 | 308,000 |
| 17. | Provision for reinsurance (Line 16) | 283,000 | (283,000) | 0 |
| 18. | Other liabilities | 829,000 | 0 | 829,000 |
| 19. | Total liabilities excluding protected cell business (Line 26) | 68,976,000 | 10,169,000 | 79,145,000 |
| 20. | Protected cell liabilities (Line 27) | 0 | 0 | 0 |
| 21. | Surplus as regards policyholders (Line 37) | 31,024,000 | 0 | 31,024,000 |
| 22. | Totals (Line 38) | 100,000,000 | 10,169,000 | 110,169,000 |

As displayed above, the asset items are adjusted in column 2 for:

- Reinsurance recoverable on loss and LAE payments in line 3, totaling $426,000
- The net amount recoverable from reinsurers in line 6, totaling $10,595,000

The amount in line 6, column 2, is simply a reversal of the balance shown in column 1, and therefore the asset side of the balance sheet. The amount in line 6 is computed as the "plug," such that the total adjustment to the assets in line 8 equals the total adjustment to the liabilities in line 19.

The liability items are adjusted in column 2 for:

- Loss and LAE in line 9, totaling $10,142,000
- Unearned premiums in line 11, totaling $920,000
- Ceded reinsurance premiums payable in line 14, totaling $440,000
- Funds held by company under reinsurance treaties in line 15, totaling $170,000
- Provision for reinsurance in line 17, totaling $283,000

The amount in line 9, column 2, is equal to the amount of ceded loss and LAE reserves per Schedule P, Part 1, Summary, of Fictitious' 2018 Annual Statement (sum of the totals in columns 14, 16, 18, 20 and 22).[70]

For companies that do not participate in intercompany pooling, line 9 is equal to the ceded reserve loss and LAE reserve balance in Schedule P, Part 1, Summary. However, for those that operate in an intercompany pooling arrangement, we note that Schedule P is prepared net of pooling on both a gross and net of external reinsurance basis, whereas Schedule F considers all assumed and ceded reinsurance, including intercompany pooling. As such, it makes it difficult to have full visibility into the loss and LAE reserve balances shown in column 2 of Schedule F, Part 6 for companies participating in intercompany pooling.

The amount in line 11, column 2 is equal to the amount of gross unearned premium reserves that are ceded, as displayed in the total line of Schedule F, Part 3, column 13, multiplied by 1,000.

The amounts in column 2 for lines 14, 15, and 17 represent a reversal of the amount in column 1.

As displayed above, there is no adjustment to surplus; therefore, the amount in column 1 equals that in column 3 ($31,024,000).

## SUMMARY

As we have seen, Schedule F is not only important to actuaries in assessing net loss and LAE reserves, but it is also an important tool to the many users of the Annual Statement in solvency monitoring because it:

[70] Schedule P is prepared net of intercompany pooling on both a gross and net of external reinsurance basis, whereas Schedule F considers all assumed and ceded reinsurance, including intercompany pooling. As such, it makes it difficult to have full visibility into the loss and LAE reserve balances shown in column 2 of Schedule F, Part 6 for companies participating in intercompany pooling arrangements.

- Identifies the amount of gross losses that emanate from the reporting entity's assumed reinsurance transactions;
- Provides an estimate of the significance of the reporting entity's assumed and ceded reinsurance transactions to its surplus;
- Enables further inquiry into the financial strength of the reporting entity's reinsureds and reinsurers;
- Quantifies "credit risk" related to reinsurance recoverables for purposes of the NAIC's RBC formula; and
- Identifies the reporting entity's reinsurers that may require further scrutiny because they are either slow at paying claims or are not regulated.

Yet, Schedule F is only one of many tools used to monitor solvency by regulators. As we have stressed throughout this publication, no one tool can be used blindly.

Further, while Schedule F is valuable, it has received some criticism as to how well it meets the regulatory objectives of monitoring solvency for the protection of policyholders. The following are a few of those criticisms:[71]

- The provision for reinsurance is strictly formulaic, potentially masking the true estimate of uncollectible reinsurance that would be determined by company management based on their knowledge of the reinsurers and terms of each contract.
- There is no statistical, historical or actuarial basis for the formula, and its application may not adequately represent an insurer's exposure to collectability risk.
- Unauthorized reinsurance may provide more and/or higher-quality reinsurance at a lower price than a competing authorized reinsurer.
- Slow payers who are financially strong eventually pay, whereas a reinsurer that is current in its payments may not be able to withstand a stress scenario to its financials.
- The numerous calculations and detail involved in determining the provision for reinsurance can lead to a false level of precision such that the true issue of collectability risk is overlooked.
- The costs associated with collateral requirements may be passed down to the primary policy, thereby costing the policyholder more for insurance.
- The provisions within Schedule F can limit competition to the U.S. market as a result of the penalty that the European reinsurers bring given that they are unauthorized.
- Schedule F does not directly tell us anything about the reinsurer's solvency, which is really the source of collectability risk.

[71] Feldblum, S., "Reinsurance Accounting: Schedule F," April 2003, pages 40-47.

## CHAPTER 15. SCHEDULE P

OVERVIEW

Schedule P is probably the most important schedule within the Annual Statement to property/casualty actuaries. Schedule P provides details underlying the recorded loss and loss adjustment expense (LAE) reserves on the reporting entity's statutory balance sheet, including 10 years of the company's historical loss and defense and cost containment (DCC) experience (i.e., net paid, case outstanding and incurred loss and DCC triangles). Because the Annual Statement is a public document, Schedule P tends to be a means for outside parties to evaluate the adequacy of recorded reserves, absent loss and LAE data provided directly by the company. And even when detailed data is provided by the company, oftentimes outside parties look to Schedule P for purposes of providing a check on the reasonableness of the recorded balances. However, there are cautions to using this information, and we have presented several within this chapter.

Schedule P has numerous other uses in addition to providing support for the recorded loss and LAE reserves. For example, Schedule P:

- Supports and provides necessary disclosures for the Statement of Actuarial Opinion, including:
    - Direct plus assumed and net loss and expense reserves
    - The amount of anticipated salvage and subrogation (S&S) that the reporting entity takes credit for in its reserves
    - The amount of tabular and non-tabular discount that the reporting entity takes credit for in its reserves
- Shows how loss reserves have developed over time and enables the reader to decipher whether development is attributed to a specific year or line of business
- 
- Shows the split between a company's reserves for known claims and those actuarially determined (i.e., IBNR reserves)
- Provides historical claim count data to facilitate review of trends in claim frequency and severity, as well as changes in claims handling and reserving
- Provides information necessary to compute the loss sensitive discount in the RBC calculation

We will discuss some of these additional uses within this chapter.

ORGANIZATIONAL STRUCTURE

There are seven parts to Schedule P plus interrogatories, as described below.

Part 1 summarizes a company's loss and LAE experience as of December 31 of the current year. It displays a company's loss and LAE reserves, after adjustment for tabular discount if applicable, and then separately shows the reserves net of all discounts (both tabular and non-tabular). These are the loss and

LAE reserves that are recorded on a company's statutory balance sheet (page 3 of the Annual Statement).

For those companies that participate in intercompany pooling, Part 1 displays the pooling percentage.

Part 2 provides a historical display of a company's net ultimate loss and DCC estimates. This enables the user to see how the company's ultimate loss and DCC estimates have developed over time. In a perfect world, the company's ultimate estimate of the cost of incurred claims would remain the same at each evaluation point. However, these are estimates, and therefore have the potential to develop upward or downward as the claims mature. The information provided in Part 2 feeds into the one-year development test in the Five-Year Data Exhibit and is also used in computing the NAIC Insurance Regulatory Information System (IRIS) ratios 11, 12 and 13.

Part 3 shows a historical array of the company's net paid loss and DCC experience as of each of the past 10 years. Actuaries can use this information to project unpaid claims using methods such as the paid loss development technique.

The difference between Part 2 (ultimates) and Part 3 (paids) provides a historical array of the company's net loss and DCC reserves as of each of the past 10 years. These amounts are provided *before* tabular discount.

Part 4 displays a company's recorded net IBNR for loss and DCC *before* tabular discount. The difference between Parts 2 and 4 provides a historical array of the company's net reported loss and DCC experience as of each of the past 10 years. This information can be used by actuaries to project unpaid claims using methods such as the case incurred loss development technique.

Part 5 provides a historical array of claim counts as of each of the past 10 years, including claims closed with payment, open claims and reported claims.

Part 6 displays the earning of premium over time, separately on a direct plus assumed and ceded basis. Like the information provided in Parts 2 through 4, the earned premium data is provided in a triangular format enabling the monitoring of premium adjustments over time.

Part 7 provides loss and premium data on loss sensitive contracts, separately for primary and reinsurance contracts, for those lines of business where such contracts are written.

All dollar amounts presented in Schedule P are in thousands (i.e., 000 omitted).

Within the remaining sections of this chapter, we will provide an overview of each part of Schedule P, focusing on those of most relevance to the property/casualty actuary. We will then get into details of those parts, providing relevant examples from the 2018 Schedule P for Fictitious Insurance Company.

SCHEDULE P — PART 1

Part 1 is shown in summary format for all lines of business combined, followed by separate schedules (Parts 1A through 1T) in the same format as Part 1 – Summary, but by Schedule P line of business. The data in Part 1 is provided on a direct plus assumed (gross) and ceded basis and includes premiums

earned, paid loss and LAE, case outstanding loss and DCC reserves, and IBNR for loss and LAE. Additionally, incurred loss and LAE ratios are displayed on a gross, ceded and net of reinsurance basis.

One item that is not included in Schedule P is the segregation of gross data into its direct and assumed components. Oftentimes actuaries look for this information separately in performing analyses of unpaid claims; however, it is not provided in Schedule P. As noted in Chapter 14. *Schedule F*, certain of this information can be provided in Schedule F, Part 1, including assumed case reserves.

*Line of Business Segmentation in Part 1*

Parts 1A through 1T provide the same information as in Part 1 – Summary, except separately by line of business. The line of business segmentations are as follows:

A – Homeowners/Farmowners
B – Private Passenger Auto Liability/Medical
C – Commercial Auto Liability/Medical
D – Workers' Compensation
E – Commercial Multiple Peril
F – Section 1 – Medical Professional Liability – Occurrence
F – Section 2 – Medical Professional Liability – Claims-Made
G – Special Liability (Ocean Marine, Aircraft (All Perils), Boiler & Machinery)
H – Section 1 – Other Liability – Occurrence[72]
H – Section 2 – Other Liability – Claims-Made
I – Special Property (Fire, Allied Lines, Inland Marine, Earthquake, Burglary & Theft)
J – Auto Physical Damage
K – Fidelity/Surety
L – Other (Including Credit, Accident and Health)
M – International
N – Reinsurance – Nonproportional Assumed Property[73]
O – Reinsurance – Nonproportional Assumed Liability[74]
P – Reinsurance – Nonproportional Assumed Financial Lines[75]
R – Section 1 – Products Liability – Occurrence[76]
R – Section 2 – Products Liability – Claims-Made
S – Financial Guaranty/Mortgage Guaranty

[72] Business reported as an aggregate write-in for other lines of business in the State Page is included here (either as occurrence or claims-made, depending on the coverage written).
[73] Property includes fire, allied, ocean marine, inland marine, earthquake, group, credit and other A&H, auto physical damage, boiler and machinery, burglary and theft and international property.
[74] Liability includes farmowners, homeowners and commercial multiperil; medical professional liability workers' compensation; other liability; products liability; auto liability; aircraft (all peril); and international liability.
[75] Financial includes financial guaranty, fidelity, surety, credit, and international financial.
[76] There is no Part Q.

T – Warranty

The definitions of these lines correspond to those on the Exhibit of Premiums and Losses (Statutory Page 14), with the exception of the three nonproportional reinsurance assumed lines (Parts N, O and P), which are not included in Statutory Page 14, as it provides information on a direct basis only. Nonproportional reinsurance assumed is generally excess of loss reinsurance, whereas proportional is generally a form of quota share reinsurance. Proportional reinsurance is included within its respective line(s) of business segments. For example, premiums and losses associated with assumed commercial property reinsurance under a quota share contract would be included within Schedule P, Part 1I, whereas the same risk assumed on an excess of loss basis would be included within Schedule P, Part 1N.

Only two accident years and a "prior years" row are shown for the following lines due to the limited amount of loss development beyond two years:

I – Special Property (Fire, Allied Lines, Inland Marine, Earthquake, Burglary & Theft)
J – Auto Physical Damage
K – Fidelity/Surety
L – Other (Including Credit, Accident and Health)
S – Financial Guaranty/Mortgage Guaranty
T – Warranty

That is, claims for the aforementioned lines of business are expected to be reported and paid within a relatively short period of time after the occurrence of a claim. Consider the Special Property line of business. If a commercial property is damaged due to fire, the insured will report the claim rather quickly to get the building repaired or rebuilt in order to continue operations. Payments may continue to the insured while the commercial property is being repaired due to business interruption; however, the insured will generally be back in business within the year in which the loss occurred. As a result, losses will develop for 12 to 24 months after the beginning of the accident year (January 1) in which the loss occurred, but typically the claim will be closed by the end of 24 months.

To illustrate the "bucketing" of claims, consider a complete fire loss to a paper mill on December 19, 2018. Assume the building is rebuilt and the insured is back in business on September 4, 2019. This claim would be recorded as an accident year 2018 claim, with loss payments extending into the second year of development (24-month period) until the claim is closed on September 4.

Despite only two years being shown in the Schedule P line of business parts, all 10 years are included in Schedule P – Part 1 – Summary. Therefore, the insurer is required to retain data for these lines in a similar 10-year format as all other lines of business in Schedule P.

Many have argued that the two-year reporting convention is not necessarily appropriate for the aforementioned lines of business due to the tail on lines such as Fidelity/Surety. These opponents would

vote for including all 10 years, as is shown for the other Schedule P lines, arguing further that all 10 years are already produced for purposes of forming the summaries in Schedule P.

*Yearly Reporting Convention*

Part 1 provides information related to earned premiums and cumulative loss and LAE data at the current evaluation date (i.e., December 31 of the current year) for the last 10 years in which premiums are earned and losses incurred. Earned premiums are shown by calendar year, and once they are entered in Schedule P, they do not change for retrospective premium adjustments or other adjustments. Losses are shown by:

- Accident year for occurrence policies
- Report year for claims-made policies
- Policy year for tail policies
- Discovery year for fidelity and surety policies

Accident year is defined as the calendar year in which accidents occur and/or losses are incurred. For example, a claim with a date of loss of November 13, 2018, would be a 2018 accident year claim. This reporting convention is used for occurrence-basis policies, where the trigger of coverage is the occurrence of a loss. With occurrence policies, a claim can be reported at any time after the loss occurs, subject to statutes of limitation, as long as the loss occurs during the policy term. For example, an injury that occurred 15 years ago can be reported to the insurer today, and any coverage for that injury would be provided by the terms and conditions of the policy that was in effect 15 years ago.

Report year represents the calendar year in which losses are reported. This is typically used for claims-made policies, as the trigger of coverage is the reporting of a claim or incident to the insurance carrier. In their most basic format, claims-made policies cover claims that are first made during the policy term. As a result, if a claim occurs during the policy period but is not reported by the insured during the policy term, the claim is not covered by the insurance company under the terms and conditions of the policy that was in force at the time the claim occurred. This significantly reduces the uncertainty for the insurance carrier, both for pricing and reserving, since the policy that is in effect at the time the claim is made will be the policy providing the coverage for the claim, regardless of how long ago the incident took place (provided there is no retroactive date on the policy).

A claims-made policy may have a retroactive date that is before the effective date of the policy, the same as the effective date of the policy or it may have no retroactive date. The retroactive date is the date on or after which the incident must occur in order for it to be covered under the claims-made policy. An incident that occurs before the retroactive date will not be covered by the claims-made policy even if it is first reported during the policy period.

These types of policies are generally issued for medical malpractice, other liability, or products liability coverages because claims covered by these types of policies tend to have a long latency period. It becomes very difficult for insurance companies to project the claim frequency as well as the severity of

claims and therefore difficult to price and reserve for an occurrence that will result in the reporting of a claim many years in the future.

To illustrate the concept of claims-made coverage and the concept of report year, assume a young surgeon purchases a medical malpractice policy on a claims-made basis for the term beginning July 1, 2018, and expiring on June 30, 2019. Assume that the surgeon performs a procedure on his patient on October 21, 2018, and complications arise during the surgery. If the surgeon reports the incident to his insurance carrier before June 30, 2019, and subsequently the surgeon is sued and a claim materializes, he will be covered under his policy in effect from July 1, 2018, through June 30, 2019. This would be a 2018 report year claim for Schedule P reporting purposes. If the surgeon does not report the incident because the patient did not become aware of the complications until a year later, and the claimant decides to sue the physician on August 22, 2019, the surgeon reports this claim to his carrier on August 23, 2019. He would not be covered by the policy in effect from July 1, 2018, through June 30, 2019, as the claim was not reported during the policy term. If the surgeon renewed the claims made policy, the renewal policy that is in effect from July 1, 2019, through June 30, 2020, would be the policy that covers the claim.

In general, the people or companies that purchase claims-made policies do not like to leave themselves exposed to the risk of being uninsured, despite the cost savings of a claims-made policy as compared to an occurrence policy. As a result, they generally purchase something called an extended reporting period or “tail coverage.” Tail coverage extends the reporting period of a claims-made policy for an additional period of time, which may be one to five years or an unlimited period of time past the expiration of the claims-made policy. A claims-made policy plus an unlimited extended reporting period essentially turns the claims-made policy into an occurrence policy. To illustrate using our previous example, let’s assume that the surgeon does not renew his claims-made policy and therefore purchases unlimited tail coverage on July 1, 2019, when the policy expires. This means that any accident or loss that occurred as a result of error by the surgeon during the period July 1, 2018, through June 30, 2019, would be a covered claim by the insurance company that issued the claims-made policy regardless of when in the future the surgeon first reports the claim. Without the tail coverage, the surgeon would have no coverage for claims that he learns about on or after July 1, 2019.

Premiums and losses associated with tail policies are included in Schedule P with their associated line on an occurrence basis.

Discovery year is generally used for fidelity and surety policies, as it is difficult to determine the actual date the “loss” occurs. As the name suggests, discovery year represents the calendar year in which a loss or damage is discovered.

For simplicity, and because it is most common, we will use the term accident year in the remainder of our discussion of Schedule P, unless explicitly stated otherwise.

Note that there is also a prior years row in Schedule P, which accumulates loss and expense information into one row within each of the schedules. The prior years row shows paid (received) activity *during* the current year (i.e., calendar year activity) and ending reserves *as of* the evaluation date of the Statement. Within this chapter we provide examples of how to calculate the prior years row; it is a bit trickier than this brief explanation suggests.

*Loss Adjustment Expenses*

Losses are provided separately from LAE, which is separated into two components: DCC expenses and Adjusting and Other (A&O) expenses. DCC generally includes defense, litigation and medical cost containment expenses, whether internal or external, and A&O includes all expenses associated with adjusting and recording policy claims, other than those included with DCC.[77] The following table summarizes the types of expenses by category.

[77] Per the Official NAIC Annual Statement Instructions for 2018, DCC are defined as "those that are correlated with the loss amounts," and A&O are defined as "those expenses that are correlated with claim counts or general loss adjusting expenses."

TABLE 31

| DCC | A&O |
|---|---|
| Surveillance expenses | Fees and expenses of adjusters and settling agents |
| Fixed amounts for medical cost containment | |
| Litigation management expenses (e.g., audit of bills) | |
| LAE for participation in voluntary and involuntary pools if reported by accident year | LAE for participation in voluntary and involuntary pools if reported by calendar year |
| Fees or salaries for:<br>• Appraisers<br>• Private investigators<br>• Hearing representatives<br>• Reinspectors<br>• Fraud investigators<br><br>(If working in defense of a claim) | Fees and salaries for:<br>• Appraisers<br>• Private investigators<br>• Hearing representatives<br>• Reinspectors<br>• Fraud investigators<br>(If working in the capacity of an adjuster) |
| Fees or salaries for rehabilitation nurses, if not included with losses | |
| Attorney fees incurred owing duty to defend, even when other coverage does not exist | Attorney fees incurred in determination of coverage, including litigation between the reporting entity and the policyholder |
| Cost of engaging experts | Adjustment expenses arising from claims related lawsuits, such as extra contractual obligations and bad faith lawsuits |

The NAIC Instructions to the Annual Statement indicate that DCC should be assigned to accident year in accordance with the associated losses, while for A&O, *"in any justifiable way, … [t]he preferred way is to apportion these expenses in proportion to the number of claims reported, closed, or outstanding each year."*[78] The following table illustrates this using Fictitious' commercial automobile liability line of business as an example. Fictitious allocates its unpaid A&O for commercial automobile liability by applying the distribution of outstanding claim counts by accident year to total unpaid A&O.

[78] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 226.

TABLE 32

| Years in Which Premiums Were Earned and Losses Were Incurred | | Number of Claims Outstanding Direct and Assumed | Distribution of Outstanding Claims | Direct and Assumed Adjusting & Other Unpaid |
|---|---|---|---|---|
| 1. | Prior | 1 | 1% | 2 |
| 2. | 2009 | 1 | 1% | 2 |
| 3. | 2010 | 1 | 1% | 2 |
| 4. | 2011 | 1 | 1% | 2 |
| 5. | 2012 | 1 | 1% | 2 |
| 6. | 2013 | 1 | 1% | 2 |
| 7. | 2014 | 2 | 3% | 4 |
| 8. | 2015 | 4 | 5% | 8 |
| 9. | 2016 | 7 | 9% | 15 |
| 10. | 2017 | 13 | 18% | 27 |
| 11. | 2018 | 42 | 57% | 89 |
| | Totals | 74 | 100% | 156 |

Disclosure of the methodology used to allocate A&O by year is required in the interrogatories to Schedule P.

LAE wasn't always segregated between DCC and A&O. Prior to 1988, LAE were stated as either allocated LAE (ALAE) and unallocated LAE (ULAE) in the Annual Statement. ALAE is defined as claim expenses that can be specifically assigned to a particular claim, and ULAE as those that cannot. ULAE is generally associated with the cost of administering claims. The terms ALAE and ULAE are still used in practice. In fact, for reserving purposes many companies perform actuarial analyses on an ALAE/ULAE basis.

*Salvage and Subrogation*

Most insurance policies require the insured to transfer the right to S&S recovery upon payment of a covered claim to an insured. Salvage is typically received by insurance companies in the case of automobile claims, when the vehicle incurs physical damage that is beyond repair. Here the insurance company can sell usable parts of the vehicle, such as tires, hubcaps and engine parts, to companies that salvage damaged vehicles.

Subrogation is typically received in the case of liability policies. For example, an insurance carrier paying a claimant for liability associated with a product manufactured by an insured, may in turn attempt to recover part or all of the amount paid to the claimant from the company that made a part used in manufacturing the product.

The paid loss figures provided in columns 4 (direct and assumed loss payments) and 5 (ceded loss payments) are net of S&S received, and the unpaid losses provided in columns 13 through 16 are net of anticipated S&S, if the company reduces its reserves for anticipated S&S. We typically find that when companies take credit for anticipated S&S, they do so in the "bulk and IBNR"[79] amounts as opposed to the "case basis" reserves. It is difficult enough to estimate reserves for known claims, let alone the amount that will be recovered for salvage and/or subrogation on those claims.

For statutory reporting purposes, insurance companies can take credit for S&S received, as well as that anticipated in its loss reserves. This means that companies can reduce their reserves by estimates of recoveries that they expect to receive in the future.

The S&S figures displayed in columns 10 (received) and 23 (anticipated) are for informational purposes only. As displayed in the formula for total net paid loss and LAE in column 11, S&S received in column 10 is not subtracted from the paid loss and LAE amounts in columns 4 through 9, as they are already reduced by the S&S received. The following illustrates the calculation on total net paid loss and LAE using data from the total line from Schedule P, Part 1 – Summary of the 2018 Annual Statement for Fictitious Insurance Company.

TABLE 33

**Data from 2018 Schedule P — Part 1 — Summary for Fictitious Insurance Company (000 omitted)**

| Column | Item | Amount | Notes |
|---|---|---|---|
| 4 | Direct and assumed loss payments | 116,277 | |
| 5 | Ceded loss payments | 16,875 | |
| | Net loss payments | 99,402 | = Column 4 — Column 5 |
| 6 | Direct and assumed DCC payments | 10,266 | |
| 7 | Ceded DCC payments | 1,067 | |
| | Net DCC payments | 9,199 | = Column 6 — Column 7 |
| 8 | Direct and assumed A&O payments | 10,830 | |
| 9 | Ceded A&O payments | 417 | |
| | Net A&O payments | 10,413 | = Column 8 — Column 9 |
| 11 | Total net paid | 119,014 | = (Columns 4 + 6 + 8) — (Columns 5 + 7 + 9) |

The S&S received figure in column 10 of Schedule P, Part 1 – Summary ($5,283 in total; 000 omitted) does not enter the above calculation, as the loss payments shown in columns 4 and 5 have already been reduced by this amount. The amount shown in column 11 is net of the S&S received amount shown in column 10.

The same goes for the total net loss and LAE unpaid in column 24; anticipated S&S in column 23 is not subtracted from the case and IBNR figures in columns 13 through 22, as it is already displayed net of

[79] Hereafter we will refer to "bulk and IBNR" simply as "IBNR."

anticipated S&S (if the company anticipates S&S in its recorded reserves). The following provides a similar illustration using total unpaid amounts from Fictitious' 2018 Schedule P, Part 1 – Summary.

TABLE 34

| Data from 2018 Schedule P — Part 1 — Summary for Fictitious Insurance Company (000 omitted) | | | |
|---|---|---|---|
| **Column** | **Item** | **Amount** | **Notes** |
| 13 | Direct and assumed case basis losses | 24,945 | |
| 14 | Ceded case basis losses | 5,343 | |
| | Net case basis losses | 19,602 | = Column 13 — Column 14 |
| 15 | Direct and assumed IBNR losses | 26,330 | |
| 16 | Ceded IBNR losses | 4,038 | |
| | Net IBNR losses | 22,292 | = Column 15 — Column 16 |
| 17 | Direct and assumed case basis DCC | 2,424 | |
| 18 | Ceded case basis DCC | 258 | |
| | Net case basis DCC | 2,166 | = Column 17 — Column 18 |
| 19 | Direct and assumed IBNR DCC | 5,401 | |
| 20 | Ceded IBNR DCC | 499 | |
| | Net IBNR DCC | 4,902 | = Column 19 — Column 20 |
| 21 | Direct and assumed A&O unpaid | 2,599 | |
| 22 | Ceded A&O unpaid | 4 | |
| | Net A&O unpaid | 2,595 | = Column 21 — Column 22 |
| 24 | Total net losses and expenses unpaid | 51,557 | = (Columns 13 + 15 + 17 + 19 + 21) — (Columns 14 + 16 + 18 + 20 + 22) |

Column 23, which provides anticipated S&S ($1,363 in total; 000 omitted), is not included in the above calculation as the amounts in loss columns are provided on a net basis.

*Composition of Loss and LAE Reserve Figures Provided in Schedule P, Part 1*

The case and IBNR reserves provided in Part 1 are net of tabular[80] discounting and gross of non-tabular discounting, up until columns 32 and 33. The amount of non-tabular discount is shown separately for loss and LAE in columns 32 and 33, respectively. For Fictitious, the amounts shown in columns 32 and 33 are zero because the Company does not discount non-tabular reserves. This is confirmed in part B of the Note to Financial Statements titled "Discounting of Liabilities for Unpaid Losses or Unpaid Loss Adjustment Expenses" (Note 32B in the 2018 Annual Statement).

The reserves shown on the Balance Sheet are provided in columns 35 and 36 for loss and LAE, respectively. These figures are on a net of reinsurance basis, and net of all discounting, if applicable. The

[80] Tabular reserves are defined on page 159 of the 2018 NAIC Annual Statement Instructions to Note 32 of the Financial Statements as "indemnity reserves that are calculated using discounts determined with reference to actuarial tables that incorporate interest and contingencies such as mortality, remarriage, inflation, or recovery from disability applied to a reasonably determinable payment stream. This definition shall not include medical loss reserves or any loss adjustment expense reserves."

sum of columns 35 and 36 will reconcile to the amount shown in column 24 reduced by the amount of discount shown in columns 32 and 33.

TABLE 35a

**Data from 2018 Schedule P - Part 1 - Summary for Fictitious Insurance Company (000 omitted)**

| Column | Item | Amount | Notes |
|---|---|---|---|
| | Total net losses unpaid | 41,894 | Columns (13 + 15) - Columns (14 + 16) |
| | Total net expenses unpaid | 9,663 | Columns (17 + 19 + 21) - Columns (18 + 20 + 22) |
| 24 | Total net losses and expenses unpaid | 51,557 | |
| 32 | Nontabular discount on losses | XXX | |
| 33 | Nontabular discount on loss expense | XXX | |
| | Total nontabular discount | XXX | = Column 32 + Column 33 |
| 35 | Net balance sheet loss reserves after discount | 41,894 | Columns (13 + 15) - Columns (14 + 16 + 32) |
| 36 | Net balance sheet loss expense reserves after discount | 9,663 | Columns (17 + 19 + 21) - Columns (18 + 20 + 22 + 33) |
| | Total net losses and expenses unpaid after discount | 51,557 | = Column 35 + Column 36 |

As we shall see in Part IV. *Statutory Filings to Accompany the Annual Statement* of this publication, Schedule P, Part 1 – Summary provides the source of the recorded reserve amounts that the Appointed Actuary opines upon in the Statement of Actuarial Opinion on behalf of the insurance company. The Appointed Actuary opines on the loss and LAE reserve amounts provided in columns 35 and 36, respectively, on a net of reinsurance basis, and columns 13 plus 15 and columns 17 plus 19 plus 21, respectively, on a gross of reinsurance basis. For Fictitious Insurance Company, the amounts shown in Exhibit A to the 2018 Statement of Actuarial Opinion, on which the Appointed Actuary has provided his opinion, are as follows.

TABLE 35b

| **Fictitious Insurance Company<br>2018 Statement of Actuarial Opinion<br>Loss and LAE Reserve Amounts Per Exhibit A** | | |
|---|---|---|
| Loss and LAE Reserves: | | Amount |
| 1. | Reserve for Unpaid Losses (Liabilities, Surplus and Other Funds page, Col 1, Line 1) | $41,894,000 |
| 2. | Reserve for Unpaid LAE (Liabilities, Surplus and Other Funds page, Col 1, Line 3) | $9,663,000 |
| 3. | Reserve for Unpaid Losses – Direct and Assumed (Should equal Schedule P, Part 1, Summary, Totals from Cols. 13 and 15, Line 12 * 1,000) | $51,275,000 |
| 4. | Reserve for Unpaid LAE – Direct and Assumed (Should equal Schedule P, Part 1 — Summary, Totals from Cols. 17, 19 and 21, Line 12 * 1,000) | $10,424,000 |

The figures shown in Schedule P are net of intercompany pooling. As suggested by the "XXX" in column 34, Fictitious does not participate in any intercompany pooling arrangements. This can be confirmed by a reading of the Notes to the Financial Statements titled *"Intercompany Pooling Arrangements"* (Note 26 in the 2018 Annual Statement) for an insurance company. We will discuss the effect of intercompany pooling on Schedule P reporting in a separate section at the end of this chapter.

*Incurred loss and LAE*

The other items of interest in Schedule P, Part 1 are the total losses and loss expense incurred columns (26 through 28) and resulting loss and LAE ratios columns (29 through 31). The loss ratio columns are useful in assessing historical performance of the business separately on a direct and assumed, ceded and net basis. For companies with non-proportional reinsurance, the loss ratios will differ on a direct and net basis, and one can get a sense if the company is paying relatively more for the reinsurance than the direct risk. Using Fictitious as an example, we see that its incurred loss and LAE ratios differ on a direct plus assumed, ceded and net of reinsurance basis.

TABLE 36

| Years in Which Premiums Were Earned and Losses Were Incurred | | Loss and Loss Expense Percentage (Incurred/Premiums Earned) | | |
|---|---|---|---|---|
| | | 29 | 30 | 31 |
| | | Direct and Assumed | Ceded | Net |
| 1 | Prior | | | |
| 2 | 2009 | 66.9 | 71.9 | 65.6 |
| 3 | 2010 | 57.7 | 44.3 | 61.3 |
| 4 | 2011 | 52.9 | 52.6 | 53.0 |
| 5 | 2012 | 61.8 | 106.5 | 54.3 |
| 6 | 2013 | 52.1 | 53.4 | 51.9 |
| 7 | 2014 | 54.9 | 52.2 | 55.2 |
| 8 | 2015 | 66.5 | 65.0 | 66.6 |
| 9 | 2016 | 62.8 | 62.3 | 62.8 |
| 10 | 2017 | 68.2 | 52.5 | 69.5 |
| 11 | 2018 | 78.9 | 72.6 | 79.4 |

Since 2014, the Company's ceded loss and expense ratios have been lower than its direct plus assumed ratios, thereby resulting in higher net loss ratios.

We should note that the amounts shown as "incurred" in columns 26 through 31 are on an "ultimate incurred" basis. This is an important definitional distinction from "case incurred," and people often get the two confused, so we will walk through the definitions here.

The following equations are different ways of presenting ultimate incurreds:

Ultimate incurred loss

= Paid loss + case outstanding loss + IBNR loss
= Reported loss + IBNR loss
= Paid loss + unpaid loss

Paid losses represent those amounts paid by the insurance carrier. Case outstanding losses represent the reserve for known claims, which is generally established by the company's claims administrators/adjusters. IBNR represents the reserve for claims Incurred But Not Reported. IBNR includes a provision for:

- Development on known claims ("case development")
- Pure IBNR, or those claims that are incurred but not yet reported to the insurance carriers
- Reopened claims

Case development is intended to cover upward and downward movements in the reserves established by the adjusters as additional information becomes available about the claim. For example, an adjuster

may establish an initial reserve for a workers' compensation claim based on the initial injury reports from the employer or claimant's doctor. However, subsequent medical examinations may uncover that the injury is worse than originally expected, resulting in additional cost and the need for an increase in the case reserve estimate to reserve the claim to its ultimate value.

Reported loss is equal to the amount of paid plus case outstanding; it represents the dollar value of loss known to the insurance company. The term "case incurred" is synonymous with "reported" and represents the reported value of known cases.

Unpaid loss (or loss reserve) equals the amount of case outstanding plus IBNR reserves. It represents the remaining amount expected to be paid on claims incurred by the insurance company.

Actuaries often derive an ultimate loss estimate using triangular projection methods. The amount unpaid (or loss reserve) can be derived using the above formulas by subtracting paid losses from the ultimate estimate. Similarly, IBNR can be determined by subtracting reported losses from the ultimate estimate.

Data used in actuarial projections can be derived from the information contained in Parts 2 through 4 of Schedule P, as will be discussed later in this chapter under the heading "Actuarial Projections" within the section "SCHEDULE P – PARTS 2 THROUGH 4."

*Claim Count Information in Part 1*

Certain line of business subparts of Part 1 also provide claim count information that is not included in Part 1 – Summary because such information is not captured for all lines. Column 12 provides the number of claims reported, direct plus assumed. However, this column only applies to certain lines and may be left blank for others, including the Summary. The applicable lines are:

- Homeowners/Farmowners
- Private Passenger Auto Liability/Medical
- Commercial Auto Liability/Medical
- Workers' Compensation
- Commercial Multiple Peril
- Medical Professional Liability
- Other Liability
- Auto Physical Damage
- Products Liability
- Warranty

Further, column 25 provides the number of claims outstanding, direct plus assumed. This column is completed for all lines except the nonproportional reinsurance assumed lines (Parts N, O and P) and therefore the Summary.

For those lines, including the Summary, where claim count information is not included, the corresponding columns are filled in with "XXX."

Claim count data can be used to explore changes in ultimate loss and LAE or reserve levels or to identify changes in claims settlement or reserving philosophy. We will provide more details in our discussion of Schedule P, Part 5; however, for now we will show the meaningful relationships that can be derived from Schedule P, Part 1 for Fictitious' Homeowners/Farmowners lines of business (Part 1A).

First, it is generally assumed that net claim counts are equal to direct and assumed counts, unless 100% of the business is ceded. The theory is that a direct claim results in a net claim, even if the value of the net claim is $0. Therefore, all ratios that we show below, both on a gross and net of reinsurance basis, are in relation to direct plus assumed counts.

Data from Schedule P, Part 1 can be used to calculate reported claim frequency, which is the relationship of reported claim counts as of December 31, 2018, to earned premium.

TABLE 37

**Data From Schedule P — Part 1 — Homeowners & Farmowners**
**(000 omitted)**
**Average Reported Claim Frequency**

| Years in Which Premiums Were Earned and Losses Were Incurred | | Earned Premium: Direct and Assumed (Col. 1) | Earned Premium: Net (Col. 3) | Number of Claims Reported Direct and Assumed (Col. 12) | Average Reported Claim Frequency: Direct and Assumed Counts/Earned Premium | Average Reported Claim Frequency: Direct and Assumed Counts/Net Earned Premium |
|---|---|---|---|---|---|---|
| 1 | Prior | XXX | XXX | XXX | XXX | XXX |
| 2 | 2009 | 1,931 | 1,763 | 242 | 0.125 | 0.137 |
| 3 | 2010 | 2,251 | 2,084 | 253 | 0.113 | 0.122 |
| 4 | 2011 | 2,721 | 2,612 | 219 | 0.081 | 0.084 |
| 5 | 2012 | 3,123 | 3,000 | 217 | 0.069 | 0.072 |
| 6 | 2013 | 3,307 | 3,231 | 216 | 0.065 | 0.067 |
| 7 | 2014 | 3,609 | 3,507 | 194 | 0.054 | 0.055 |
| 8 | 2015 | 3,816 | 3,713 | 300 | 0.079 | 0.081 |
| 9 | 2016 | 4,003 | 3,895 | 296 | 0.074 | 0.076 |
| 10 | 2017 | 4,294 | 4,178 | 325 | 0.076 | 0.078 |
| 11 | 2018 | 4,550 | 4,445 | 427 | 0.094 | 0.096 |
| 12 | Totals | XXX | XXX | XXX | XXX | XXX |

Table 37 can help us identify trends in claim frequency over the accident years. It is not a complete picture because claim counts are on a reported basis, as opposed to ultimate. However, for a short-tailed line of business such as homeowners, where losses are generally reported within the year in which they are incurred (i.e., accident year), it is not a bad approximation. Reported claim frequency appears to have increased in 2018 relative to both gross and net earned premiums (e.g., frequency in 2018 of 0.094 per $000 of gross earned premium versus 2017 of 0.076). This is most likely due to the high frequency of weather-related and catastrophe claims incurred by the Company during 2018.

We note that the interpretation of frequency trends using earned premium can be misleading due to the effect of rate changes. In our example, the increasing trend in Fictitious' claim frequency relative to earned premium may be partly attributed to soft market conditions in addition to the number of catastrophe claims. Viewing claim frequency in terms of exposures (e.g., house years for homeowners) would provide a clearer comparison and enhance the ability to understand observed trends. Regardless, when investigating trends in claim frequency, consideration should be made for changes over time in a company's mix of business (e.g., by types of exposures, geography), policy limits, reinsurance attachment points and limits, as well as the way the company counts its claims.

We can also compute the average value of reported claims by year, with each year evaluated as of December 31, 2018, using Schedule P, Part 1 data, as shown below.

TABLE 38

**Data From Schedule P — Part 1 — Homeowners & Farmowners**
**(000 omitted)**

**Average Reported Loss and DCC Severity**

| | | Reported Loss and DCC | | | Average Reported Loss & DCC | | Trend in Average Reported $ | |
|---|---|---|---|---|---|---|---|---|
| Years in Which Premiums Were Earned and Losses Were Incurred | | Direct and Assumed (Cols. 4 + 6 + 13 + 17) | Net (Direct - Ceded per Cols. 5 + 7 + 14 + 18) | Number of Claims Reported Direct and Assumed (Col. 12) | Direct and Assumed Reported $/Counts *1000 | Net Reported $/Direct and Assumed Counts *1000 | Direct and Assumed Severity in Accident Year 20XX+1 divided by 20xx | Net Severity in Accident Year 20XX+1 divided by 20xx |
| 1 | Prior | 6 | 6 | XXX | XXX | XXX | XXX | XXX |
| 2 | 2009 | 1,021 | 942 | 242 | 4,219 | 3,893 | | |
| 3 | 2010 | 1,170 | 1,107 | 253 | 4,625 | 4,375 | 10% | 12% |
| 4 | 2011 | 1,450 | 1,381 | 219 | 6,621 | 6,306 | 43% | 44% |
| 5 | 2012 | 1,644 | 1,368 | 217 | 7,576 | 6,304 | 14% | 0% |
| 6 | 2013 | 1,350 | 1,349 | 216 | 6,250 | 6,245 | -18% | -1% |
| 7 | 2014 | 1,407 | 1,405 | 194 | 7,253 | 7,242 | 16% | 16% |
| 8 | 2015 | 2,186 | 2,185 | 300 | 7,287 | 7,283 | 0% | 1% |
| 9 | 2016 | 2,214 | 2,208 | 296 | 7,480 | 7,459 | 3% | 2% |
| 10 | 2017 | 2,421 | 2,419 | 325 | 7,449 | 7,443 | 0% | 0% |
| 11 | 2018 | 3,372 | 3,369 | 427 | 7,897 | 7,890 | 6% | 6% |
| 12 | Totals | 18,241 | 17,739 | XXX | XXX | XXX | XXX | XXX |

We see that there hasn't been much of a trend in the average cost per reported claim since 2015, until we get to 2018. The relatively flat trend from 2015 through 2017 is most likely due to economic factors during the time period and general flattening of costs associated with the repair and rebuilding of damaged properties. Similar to the increase in frequency in 2018, the increase in claim costs is primarily attributed to an increase in the size of claims due to the catastrophic events of 2018.

Here again, the comparison does not provide a complete picture because we are comparing accident year data at different levels of maturity rather than evaluating the reported loss and claims counts at their ultimate values. As we shall see, comparisons at the ultimate level can be made by developing loss and DCC data provided in Parts 2 through 4 and claim count data provided in Part 5.

Finally, we can also show the average cost of open claims as of December 31, 2018, using Part 1 data, as provided in the Table 39:

TABLE 39

**Data From Schedule P — Part 1 — Homeowners & Farmowners**
**(000 omitted)**
**Average Case Outstanding Loss and DCC Severity**

| | | Case Basis Loss and DCC | | Number of Claims Outstanding Direct and Assumed (Col. 25) | Average Case O/S Loss & DCC | |
|---|---|---|---|---|---|---|
| | Years in Which Premiums Were Earned and Losses Were Incurred | Direct and Assumed (Cols. 13 + 17) | Net (Direct – Ceded per Cols. (14 + 18) | | Direct and Assumed Case Basis $/Counts *1,000 | Net Case Basis $/Direct and Assumed Counts *1,000 |
| 1 | Prior | 4 | 4 | 1 | 4,000 | 4,000 |
| 2 | 2009 | 0 | 0 | 1 | 0 | 0 |
| 3 | 2010 | 1 | 1 | 1 | 1,000 | 1,000 |
| 4 | 2011 | 2 | 2 | 1 | 2,000 | 2,000 |
| 5 | 2012 | 3 | 0 | 1 | 3,000 | 0 |
| 6 | 2013 | 8 | 8 | 1 | 8,000 | 8,000 |
| 7 | 2014 | 18 | 18 | 1 | 18,000 | 18,000 |
| 8 | 2015 | 40 | 40 | 1 | 40,000 | 40,000 |
| 9 | 2016 | 61 | 61 | 1 | 61,000 | 61,000 |
| 10 | 2017 | 124 | 124 | 3 | 41,333 | 41,333 |
| 11 | 2018 | 366 | 366 | 21 | 17,429 | 17,429 |
| 12 | Totals | 627 | 624 | 33 | 19,000 | 18,909 |

What we see in Table 39 is that the case outstanding reserve values and number of open claims generally decrease with maturity (ignoring the prior years row, which is a compilation of all prior years into one line). This makes sense, as eventually all claims will be closed and the outstanding reserves will be $0.[81] We also see that the average case reserves increase in maturity to a certain point, at which they decrease (ignoring the prior years row). This suggests that the claims that remain open after 24 months (accident year 2017 in this case) tend to be the larger dollar-valued claims. Put another way, the claims that cost the least tend to be the easiest to administer and close, while the more costly claims take longer to settle and pay out. This makes sense and is generally the case with property/casualty lines of business. As time goes on, the average case reserve for homeowners claims tends to decrease as the payments decline to closure.

The average case reserve values are lower on accident year 2018 relative to the immediately prior periods. There are still small to midsized claims, in addition to the large dollar-value claims, that remain open on the current accident year. These low-value claims suppress the average.

[81] Sometimes we will see a very high severity in a mature accident year, relative to the surrounding years and the general decreasing trend with maturity. This will happen when there's one or a small number of large dollar-valued claims outstanding.

SCHEDULE P — PARTS 2 THROUGH 4

Parts 2 through 4 provide a historical array of incurred, paid and IBNR loss and DCC, respectively. The data is provided on a net of reinsurance and net of S&S (as applicable) basis.

Similar to Part 1 – Summary, the information in the Summary of Parts 2 through 4 is provided for each of the past 10 years in which losses were incurred using the aforementioned definitions depending on the type of policies (e.g., occurrence, claims-made, tail, or fidelity and surety). The data is evaluated as of December 31 for each of the last 10 years.

Details are provided by line of business in the same breakdowns as in Part 1, with 10 accident years shown for all lines except for those lines previously mentioned (e.g., Special Property, Auto Physical Damage).

*Discounting*

Parts 2 through 4 of Schedule P are gross of all discounting. Therefore, the reserve amounts shown in Parts 2 through 4 will not reconcile to those provided in Part 1 for companies that discount nontabular reserves. The amount of discount is reported in the Notes to Financial Statements, which enables reconciliation between Part 1 and Parts 2 through 4.

We can illustrate this using Schedule P, Parts 1, 2 and 3, Summary for Fictitious. As displayed in Table 40b, the difference between the total net loss and DCC reserve reported in Schedule P, Part 1 and the amount indicated by subtracting the figures in column 10 of Parts 2 and 3 provides the $1.365 million of reduction for tabular discount taken in Schedule P, Part 1.

TABLE 40a

| Data from 2018 Annual Statement for Fictitious Insurance Company | | | |
|---|---|---|---|
| **Years in Which Losses Were Incurred** | **Net Loss and DCC at Year End per Schedule P (000 omitted)** | | |
| | **Net Incurred Part 2 Summary** | **Net Paid Part 3 Summary** | **Net Unpaid Part 2 — Part 3 Summary** |
| Prior | 46,022 | 30,210 | 15,812 |
| 2009 | 13,387 | 12,202 | 1,185 |
| 2010 | 13,540 | 12,238 | 1,302 |
| 2011 | 12,099 | 10,933 | 1,166 |
| 2012 | 12,321 | 10,919 | 1,402 |
| 2013 | 11,679 | 9,804 | 1,875 |
| 2014 | 12,895 | 10,503 | 2,392 |
| 2015 | 15,635 | 12,130 | 3,505 |
| 2016 | 14,745 | 10,332 | 4,413 |
| 2017 | 16,345 | 9,774 | 6,571 |
| 2018 | 19,364 | 8,660 | 10,704 |
| Total | 188,032 | 137,705 | 50,327 |

TABLE 40b

| Net Unpaid Loss and DCC Reserves Per Schedule P — Part 1 — Summary (000 omitted) | |
|---|---|
| Column 24, Total Net Losses and Expenses Unpaid, Line 12, Totals: | 51,557 |
| Column 21, Direct and Assumed A&O Unpaid, Line 12, Totals: | 2,599 |
| Column 22, Ceded A&O Unpaid, Line 12, Totals: | 4 |
| Column 24 — (Column 21 — Column 22), Total Net Losses and DCC Unpaid: | 48,962 |
| **Difference, Schedule P — Part 2 minus Part 3 and Schedule P — Part 1:** | **1,365** |
| **Note to Financial Statement on Discounting (in whole dollars)** | |
| Workers' Compensation Cases: | 495,000 |
| Workers' Compensation IBNR: | 664,000 |
| Other Liability Cases: | 21,000 |
| Other Liability IBNR: | 15,000 |
| Other Liability — Structured Payments IBNR: | 170,000 |
| Total Amount of Tabular Discount per Notes to Financial Statements: | 1,365,000 |
| **Total Amount of Tabular Discount per Notes to Financial Statements, divided by 1,000:** | **1,365** |

The amount of tabular discount included in Schedule P, Part 1 should reconcile to the amount disclosed in the Note titled *"Discounting of Liabilities for Unpaid Losses or Unpaid Loss Adjustment Expenses"* (Note 32 of the 2018 Annual Statement).

*Actuarial Projections*

The format of Parts 2 through 4 is conducive for loss development projection methods used by actuaries to assess a company's reserve adequacy. However, actuaries tend to view the data in a slightly different format than that presented in Parts 2 through 4. Shifting all of the cells to the left so that each accident year starts with figures in column 1 transforms the data into standard triangular format used in the loss development (or "chain ladder") method. The paid loss triangle comes directly from Schedule P, Part 3, and the case incurred loss triangle can be derived by subtracting the IBNR in Part 4 from the incurreds in Part 2. The following provides the calculation of the net case incurred (reported) triangle for Fictitious Insurance Company.

TABLE 41a

**Data from 2018 Annual Statement for Fictitious Insurance Company, Schedule P — Part 2 — Summary**

**Incurred Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)**

| Years in Which Losses Were Incurred | 12 Months | 24 Months | 36 Months | 48 Months | 60 Months | 72 Months | 84 Months | 96 Months | 108 Months | 120 Months | 120 Months |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Prior | XXX | 35,994 | 38,360 | 41,784 | 43,601 | 44,861 | 45,378 | 45,947 | 45,884 | 45,845 | 46,022 |
| 2009 | 14,249 | 13,109 | 13,545 | 13,763 | 13,842 | 13,778 | 13,722 | 13,657 | 13,408 | 13,387 | |
| 2010 | 14,434 | 13,651 | 14,040 | 13,994 | 14,032 | 14,042 | 13,748 | 13,617 | 13,540 | | |
| 2011 | 15,733 | 14,265 | 13,630 | 13,209 | 12,726 | 12,485 | 12,288 | 12,099 | | | |
| 2012 | 15,982 | 14,733 | 14,195 | 13,210 | 12,768 | 12,445 | 12,321 | | | | |
| 2013 | 13,501 | 13,051 | 12,370 | 12,056 | 11,837 | 11,679 | | | | | |
| 2014 | 13,938 | 13,629 | 13,303 | 13,265 | 12,895 | | | | | | |
| 2015 | 15,980 | 16,106 | 16,015 | 15,635 | | | | | | | |
| 2016 | 14,917 | 14,851 | 14,745 | | | | | | | | |
| 2017 | 15,972 | 16,345 | | | | | | | | | |
| 2018 | 19,364 | | | | | | | | | | |
| | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Ending | | 50,243 | 65,903 | 84,713 | 101,651 | 114,561 | 127,581 | 141,626 | 154,924 | 169,543 | 188,032 |
| | Check: | — | — | — | — | — | — | — | — | — | — |

TABLE 41b

**Data from 2018 Annual Statement for Fictitious Insurance Company,**
**Schedule P — Part 4 — Summary**
**Bulk and IBNR Net Losses and Defense and Cost Containment Expenses Reported at Year-End**
**(000 omitted)**

| Years in Which Losses Were Incurred | 12 Months | 24 Months | 36 Months | 48 Months | 60 Months | 72 Months | 84 Months | 96 Months | 108 Months | 120 Months | 120 Months |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Prior | XXX | 17,126 | 14,330 | 13,764 | 12,807 | 12,285 | 11,632 | 10,529 | 9,752 | 8,907 | 8,088 |
| 2009 | 7,093 | 3,349 | 2,393 | 1,821 | 1,445 | 1,249 | 1,121 | 1,010 | 728 | 677 | |
| 2010 | 7,149 | 3,583 | 2,544 | 1,799 | 1,479 | 1,370 | 1,016 | 814 | 713 | | |
| 2011 | 8,512 | 4,667 | 3,068 | 2,149 | 1,505 | 1,122 | 864 | 651 | | | |
| 2012 | 7,337 | 4,644 | 3,505 | 2,131 | 1,522 | 1,030 | 876 | | | | |
| 2013 | 6,333 | 4,175 | 2,757 | 1,959 | 1,440 | 1,114 | | | | | |
| 2014 | 6,022 | 3,756 | 2,640 | 2,018 | 1,459 | | | | | | |
| 2015 | 6,400 | 3,932 | 2,810 | 1,850 | | | | | | | |
| 2016 | 6,008 | 3,544 | 2,511 | | | | | | | | |
| 2017 | 5,817 | 3,682 | | | | | | | | | |
| 2018 | 6,422 | | | | | | | | | | |
| | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Ending | | 24,219 | 24,828 | 28,252 | 29,176 | 29,574 | 30,211 | 29,569 | 28,961 | 27,972 | 28,043 |
| | Check: | — | — | — | — | — | — | — | — | — | — |

TABLE 41c

**Difference between Schedule P — Part 2 — Summary and Part 4 — Summary**

**Case Incurred (Reported) Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)**

| Years in Which Losses Were Incurred | 12 Months | 24 Months | 36 Months | 48 Months | 60 Months | 72 Months | 84 Months | 96 Months | 108 Months | 120 Months | 120 Months |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Prior | XXX | 18,868 | 24,030 | 28,020 | 30,794 | 32,576 | 33,746 | 35,418 | 36,132 | 36,938 | 37,934 |
| 2009 | 7,156 | 9,760 | 11,152 | 11,942 | 12,397 | 12,529 | 12,601 | 12,647 | 12,680 | 12,710 | |
| 2010 | 7,285 | 10,068 | 11,496 | 12,195 | 12,553 | 12,672 | 12,732 | 12,803 | 12,827 | | |
| 2011 | 7,221 | 9,598 | 10,562 | 11,060 | 11,221 | 11,363 | 11,424 | 11,448 | | | |
| 2012 | 8,645 | 10,089 | 10,690 | 11,079 | 11,246 | 11,415 | 11,445 | | | | |
| 2013 | 7,168 | 8,876 | 9,613 | 10,097 | 10,397 | 10,565 | | | | | |
| 2014 | 7,916 | 9,873 | 10,663 | 11,247 | 11,436 | | | | | | |
| 2015 | 9,580 | 12,174 | 13,205 | 13,785 | | | | | | | |
| 2016 | 8,909 | 11,307 | 12,234 | | | | | | | | |
| 2017 | 10,155 | 12,663 | | | | | | | | | |
| 2018 | 12,942 | | | | | | | | | | |
| | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Ending | | 26,024 | 41,075 | 56,461 | 72,475 | 84,987 | 97,370 | 112,057 | 125,963 | 141,571 | 159,989 |
| | Check: | — | — | — | — | — | — | — | — | — | — |

The “ending” rows simply provide the sum of each of the diagonals of data, thereby showing the ending balances as of December 31 of the respective years.

The following provides the net paid loss and DCC triangle for Fictitious in the same triangular format as shown above for reported loss and DCC.

TABLE 42

**Data from 2018 Annual Statement for Fictitious Insurance Company, Schedule P — Part 3 — Summary**

**Cumulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)**

| Years in Which Losses Were Incurred | 12 Months | 24 Months | 36 Months | 48 Months | 60 Months | 72 Months | 84 Months | 96 Months | 108 Months | 120 Months | 120 Months |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Prior | XXX | 000 | 9,061 | 13,830 | 18,110 | 21,281 | 23,728 | 26,341 | 27,752 | 29,108 | 30,210 |
| 2009 | 3,881 | 6,637 | 8,297 | 9,620 | 10,627 | 11,289 | 11,686 | 11,961 | 12,108 | 12,202 | |
| 2010 | 4,121 | 7,109 | 9,011 | 10,142 | 11,035 | 11,552 | 11,847 | 12,070 | 12,238 | | |
| 2011 | 4,061 | 6,981 | 8,385 | 9,439 | 10,067 | 10,485 | 10,772 | 10,933 | | | |
| 2012 | 4,376 | 7,649 | 8,904 | 9,766 | 10,329 | 10,724 | 10,919 | | | | |
| 2013 | 4,208 | 6,630 | 7,898 | 8,803 | 9,481 | 9,804 | | | | | |
| 2014 | 4,591 | 7,325 | 8,821 | 9,846 | 10,503 | | | | | | |
| 2015 | 6,026 | 9,265 | 10,971 | 12,130 | | | | | | | |
| 2016 | 5,626 | 8,740 | 10,332 | | | | | | | | |
| 2017 | 6,278 | 9,774 | | | | | | | | | |
| 2018 | 8,660 | | | | | | | | | | |
| | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Ending | | 3,881 | 19,819 | 33,297 | 48,098 | 62,292 | 75,616 | 90,661 | 104,889 | 120,098 | 137,705 |
| | Check: | — | — | — | — | — | — | — | — | — | — |

*Cautions When Using Schedule P to Assess Reserve Adequacy*

Age-to-age loss development factors can be computed from the above triangles and projections of ultimate loss and DCC made. However, we note several issues that we have observed in practice with blindly using Schedule P data to assess the adequacy of an insurance company's reserves:

- While there are Instructions to the Annual Statement and third-party companies provide software to assist insurers in preparing their Schedule P, certain allocations and presentations are left up to interpretation of the person completing Schedule P.
- Internal pooling or reinsurance agreements may have an impact on the data set, and that impact may not be readily apparent from Schedule P. For example, we have seen pooling and reinsurance arrangements on a calendar year basis, as opposed to accident or policy year, which distorts Schedule P since it is on a net (or after pool) basis.
- Schedule P contains experience from a company's participation in voluntary and involuntary pools and/or associations. Many underwriting pools report IBNR reserves as case reserves, thereby distorting analytics and projections that use case base reserves. Further, a company's level of participation in the pool may have changed over time.

- Schedule P only contains data for the last 10 accident years. Most casualty lines have experienced loss development significantly longer than 10 years. Tail development factors have to be estimated using other (external) sources, thereby increasing the uncertainty of the projections.
- Commutations of reinsurance agreements can also distort an analysis of loss development using Schedule P. Commutations represent an agreement between a reinsurer and the reinsured to release all obligations under a reinsurance contract. Typically, the reinsurer will pay a lump sum to the reinsured to extinguish all future liabilities. The reinsurer's case and IBNR reserves for the assumed contract will drop to $0 upon paying the lump sum, while the ceding company's net reserves should increase since the ceding company can no longer take credit for the reinsurance and "reassumes" the liability.
- The data triangles in Parts 2 through 4 include DCC expenses, potentially masking trends in the loss or DCC components that may impact reserve needs.
- Analytics of the data, including a review of loss ratios, claim closure rates from Part 5 data, and average severities from data contained in Parts 2 through 5 can provide observations regarding trends. However, the underlying cause for these trends, and determination of their impact on future claim payments, can only be obtained through discussion with company management, including interviews with management in the pricing, underwriting and claims departments of the insurance company. Care should be taken in the interpretation of these trends absent these discussions.

This list is not intended to be all-inclusive, but rather illustrate that care should be taken when drawing conclusions about a company's recorded reserves using Schedule P data alone.

As with any unpaid claim analysis, consideration should be made for changes in the company's business, including but not limited to retentions, claims settlement and reserving, business mix, and underlying exposures. One of the Schedule P Interrogatories helps to address this. Interrogatory 7 asks for further explanation regarding *"any especially significant events, coverage, retention or accounting changes that have occurred that must be considered"* in using Schedule P data to assess reserve adequacy.

*Hindsight Tests from Part 2*

Part 2 represents ultimate incurred loss and DCC by accident year, recorded by the company at the end of each of the last 10 years. Part 2 is particularly useful as it shows how the company's estimates of ultimate loss and DCC have fared over the past year and past two years, as displayed in columns 11 and 12, respectively. The figures in column 11 provide the change in ultimates over the past year (column 10 minus column 9) for all accident years prior to the current accident year. Column 12 provides the change in ultimates over the past two years (column 10 minus column 8) for all but the most recent two accident years.

The totals of the figures in columns 11 and 12 of Part 2 – Summary reconcile directly to the current calendar year figures in column 1, lines 73 and 75 respectively, of the Five-Year Historical Data exhibit within the Annual Statement. This is illustrated below for Fictitious Insurance Company using the 2018 Annual Statement:

TABLE 43a

**Data from 2018 Annual Statement for Fictitious Insurance Company**
**Schedule P — Part 2 — Summary (000 omitted)**
**Incurred Net Losses and Defense and Cost Containment Expenses Reported at Year-end**

| Years in Which Losses Were Incurred | Development | |
|---|---|---|
| | One Year | Two Year |
| Prior | 177 | 138 |
| 2009 | (21) | (270) |
| 2010 | (77) | (208) |
| 2011 | (189) | (386) |
| 2012 | (124) | (447) |
| 2013 | (158) | (377) |
| 2014 | (370) | (408) |
| 2015 | (380) | (471) |
| 2016 | (106) | (172) |
| 2017 | 73 | XXX |
| 2018 | XXX | XXX |
| Total | (875) | (2,601) |

TABLE 43b

| **Five-Year Historical Data (000 omitted)** | |
|---|---|
| | 2018 |
| 73. Development in estimated losses and loss expenses incurred prior to current year (Schedule P, Part 2 — Summary, Line 12, Col. 11) | (875) |
| 75. Development in estimated losses and loss expenses incurred 2 years before the current year and prior year (Schedule P, Part 2—- Summary, Line 12, Col. 12) | (2,602) |

While the absolute dollar amount of development is useful, it is valuable to view loss development in relation to prior year reserves from which the development has emerged, as well as on prior year surplus. For Fictitious, the $0.875 million of favorable development represents less than 1.8% of prior year reserves totaling $49.445 million.[82] This means that, with perfect hindsight, company management would have established reserves at $48.570 million ($49.445 million minus $0.875 million).

In Part IV, *Statutory Fillings to Accompany the Annual Statement* of this publication, we discuss loss development as a ratio to surplus in further detail. This is a measure used by the NAIC IRIS. For now, we will simply state that the $0.875 million of favorable development represents less than 2.8% of policyholders' surplus as of December 31, 2017, totaling $31.608 million per column 2, line 37 of page 3 of the company's 2018 Annual Statement.

A benefit of Part 2 is that it provides further insight into the observed development. The development across all accident years may be negligible in aggregate; however, there may be large increases or decreases in certain accident years or lines of business that warrant further investigation.

As displayed above, Fictitious Insurance Company experienced favorable development in 2018, totaling $0.875 million on prior accident years. We see that the favorable development on accident years 2009 through 2016 was somewhat offset by adverse development on the prior accident years and the current accident year. This is where the actuary becomes a detective to uncover the cause of the development.

- First, when we see adverse development in the prior accident years, we might first look to the longer-tailed casualty lines as the culprit. Schedule P, Parts 2A through 2T provide net incurred loss and DCC development for each of the Schedule P lines of business.
- Second, when we see adverse development on the "all prior" years, and then a consistent trend of favorable development, we question the difference between the exposures in the prior

[82] The net loss and DCC reserve of $49.4 million as of December 31, 2017, was computed by subtracting column 9 in Schedule P, Part 2 – Summary from column 9 in Schedule P, Part 3 – Summary (i.e., ultimate incurred minus paid = unpaid). This was done to put the reserve amount on the same basis as the development amount, both of which are undiscounted.

accident years versus those in the subsequent accident years. Generally speaking, if the exposures underlying the prior years were consistent with those in subsequent accident years, we would expect the adverse development to flow through to the current years as well.

Once we identify the line of business, we could look to other areas of the Annual Statement for guidance. For example, we can turn to the Notes to the Financial Statements, in particular *"*Changes in Incurred Losses and Loss Adjustment Expenses*"* (Note 25 of the 2018 Annual Statement) for further details. This Note provides management's explanation for development during the year. This may lead to review of additional notes, such as the note titled *"*Asbestos/Environmental Reserves*."* Oftentimes when we see adverse development isolated to the prior years row, we look to see if it stems from asbestos and environmental (A&E) claims activity.[83]

While the line of business details in Parts 2A through 2T and Notes to the Financials provide further insight into the source of loss development, they do not substitute the value of a conversation with management of the insurance company. Management can provide further color around the causes of development that pure numbers and notes cannot.

*Prior Years Row*

The calculation of the prior years row in Schedule P, Parts 2 through 4 can be a bit cumbersome and confusing. The easiest way to explain the calculation is to start backwards, providing the source of the prior years row for Schedule P, Part 4, and then work our way to the details underlying the computation of Part 3, and then Part 2.

*Prior Years Row – Part 4*

The prior row in Part 4 is the most straightforward. It is simply the amount recorded by the company for bulk and IBNR reserves for all accident years prior to the most recent 10. This amount is determined by the company's management and recorded in Part 4, as are the amounts for all subsequent accident years.

One can reconcile the prior year balances at each evaluation date (i.e., across the columns) to Schedule P, Part 1 of the current and prior year Annual Statements. Specifically, the amount in column 15 (direct and assumed bulk + IBNR loss) minus 16 (ceded bulk + IBNR loss) plus 19 (direct and assumed bulk + IBNR DCC) minus 20 (ceded bulk + IBNR DCC) of Schedule P, Part 1, should equal the last number in column 10 of the prior row in Part 4 after adjusting for any tabular discount. The following provides the calculation for Fictitious for 2018.

[83] There is considerable uncertainty around the reserving for these types of claims due to the length of time between exposure to manifestation of disease that gives rise to a claim. As such, the industry has experienced considerable adverse development on reserves established for these claims over the years.

TABLE 44a[84]

| Prior years row | Sch P Part 1 Column | Amount $000s |
|---|---|---|
| Direct plus assumed bulk + IBNR loss | 15 | 7,719 |
| minus Ceded bulk + IBNR loss | 16 | 1,416 |
| plus direct plus assumed bulk + IBNR DCC | 19 | 1,545 |
| minus Ceded bulk + IBNR DCC | 20 | 138 |
| Net bulk + IBNR loss & DCC (net of tabular discount) | | 7,710 |
| plus tabular discount | | 378 |
| Net bulk + IBNR per Schedule P, Part 4 | 2018 | 8,088 |

The entire prior years row for Part 4 is provided below.

TABLE 44b

| Bulk and IBNR Reserves on Net Losses and Defense Cost Containment Expenses Reported at Year End (000 omitted) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Years in Which Losses Were Incurred | 1<br>2009 | 2<br>2010 | 3<br>2011 | 4<br>2012 | 5<br>2013 | 6<br>2014 | 7<br>2015 | 8<br>2016 | 9<br>2017 | 10<br>2018 |
| 1. Prior | 17,126 | 14,330 | 13,764 | 12,807 | 12,285 | 11,632 | 10,529 | 9,752 | 8,907 | 8,088 |

*Prior Years Row – Part 3*

As discussed previously, Part 3 provides cumulative paid loss and DCC for the latest 10 accident years, evaluated as of the end of each of those years. The prior row for Part 3 also provides cumulative paid data; however, it does not start with the cumulative payments from the first year that the company wrote business. Rather, it shows the payments that have occurred on loss and DCC reserves as of the earliest evaluation date in the table, for all prior accident years. Only payments made subsequent to the establishment of reserves as of the earliest evaluation date in the table are shown. The 2018 Annual Statement for Fictitious shows the prior row for Part 3 as the following.

[84] The amount of tabular discount shown in the table is derived from the data in Fictitious' Schedule P by taking the bulk and IBNR in the prior years row from Part 4 minus the corresponding amount in Part 1.

TABLE 45

**Data from 2018 Annual Statement for Fictitious Insurance Company, Schedule P — Part 3 — Summary**

**Cumulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)**

| | Years in Which Losses Were Incurred | 1<br>2009 | 2<br>2010 | 3<br>2011 | 4<br>2012 | 5<br>2013 | 6<br>2014 | 7<br>2015 | 8<br>2016 | 9<br>2017 | 10<br>2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Prior | 000 | 9,061 | 13,830 | 18,110 | 21,281 | 23,728 | 26,341 | 27,752 | 29,108 | 30,210 |

The amount of $9,061 in column 2 represents net amounts paid in 2010 on net loss and DCC reserves established by the Company as of December 31, 2009. The amount shown in column 3 of $13,830 represents net amounts paid *since* year-end 2009 on net loss and LAE reserves as of December 31, 2009, for all prior accident years. This continues all the way until 2018, where the amount of $30,210 represents net amounts paid since year-end 2002 (through year-end 2018) on net loss and DCC reserves as of December 31, 2009, for all prior accident years.

Only loss and DCC payments on reserves evaluated as of the earliest evaluation date (December 31, 2009, in our example) are shown in the prior row. As a result, the balance in the first column is always zero.

The calculation of the prior row in Part 3 is done by computing the incremental payments subsequent to the earliest evaluation date (2009 in our example) for both the prior and first subsequent accident year from the previous year's Schedule P, Part 3 (2017 in our example). The following provides this calculation using Part 3 from the 2017 Schedule P for Fictitious.

TABLE 46

**Data from 2017 Annual Statement for Fictitious Insurance Company, Schedule P — Part 3 — Summary**

**Cumulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)**

| Years in Which Losses Were Incurred | 1<br>2008 | 2<br>2009 | 3<br>2010 | 4<br>2011 | 5<br>2012 | 6<br>2013 | 7<br>2014 | 8<br>2015 | 9<br>2016 | 10<br>2017 |
|---|---|---|---|---|---|---|---|---|---|---|
| Prior | 000 | 8,238 | 14,960 | 18,129 | 21,279 | 23,817 | 25,840 | 28,163 | 29,380 | 30,519 |
| 2008 | 4,680 | 8,297 | 10,637 | 12,236 | 13,367 | 13,999 | 14,424 | 14,714 | 14,908 | 15,124 |

**Calculation to Transition 2017 Part 3 Prior Row to 2011 Schedule P, Part 3**

**Current Column minus 2002 Column (Column 2) in 2010 Part 3**

| Years in Which Losses Were Incurred | 1<br>2008 | 2<br>2009 | 3<br>2010 | 4<br>2011 | 5<br>2012 | 6<br>2013 | 7<br>2014 | 8<br>2015 | 9<br>2016 | 10<br>2017 |
|---|---|---|---|---|---|---|---|---|---|---|
| Prior | | — | 6,722 | 9,891 | 13,041 | 15,579 | 17,602 | 19,924 | 21,142 | 22,281 |
| 2008 | | — | 2,340 | 3,939 | 5,070 | 5,702 | 6,127 | 6,417 | 6,611 | 6,828 |
| Sum | | — | 9,062 | 13,830 | 18,110 | 21,282 | 23,729 | 26,342 | 27,753 | 29,108 |

**Data from 2018 Annual Statement for Fictitious Insurance Company, Schedule P — Part 3 — Summary**

**Cumulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)**

| Years in Which Losses Were Incurred | 1<br>2009 | 2<br>2010 | 3<br>2011 | 4<br>2012 | 5<br>2013 | 6<br>2014 | 7<br>2015 | 8<br>2016 | 9<br>2017 | 10<br>2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Prior | 000 | 9,061 | 13,830 | 18,110 | 21,281 | 23,728 | 26,341 | 27,752 | 29,108 | 30,210 |

As displayed above, the starting point for the calculation is the first two rows (prior and 2008) of Part 3 of the Fictitious 2017 Annual Statement. To calculate the prior years row for Part 3 of Fictitious' 2018 Annual Statement, the difference between amounts in each column and the amounts in column 2 (2009) is computed. The prior and subsequent accident year (2008) payments are then added together to produce the new prior row for Part 3 of the Company's 2018 Schedule P.

For example, cumulative net paid loss and DCC for column 2 (2010) are calculated as:

14,960 - 8,238 + 10,637 - 8,297 = 6,722 + 2,340 = 9,061[85]

As another example, the cumulative net paid loss and DCC for column 10 (2017) are calculated as:

[85] Minor differences due to rounding.

30,519 - 8,238 + 15,124 - 8,297 = 22,281 + 6,827 = 29,108[86]

*Prior Years Row – Part 2*

As discussed previously, Part 2 provides cumulative ultimate incurred loss and DCC for the latest 10 accident years, evaluated as of the end of each of those years. The prior row for Part 2 also provides cumulative incurred data; however, it does not start with the cumulative incurreds from the first year that the company wrote business. Rather, it starts with the net loss and DCC reserves recorded by the Company as of the earliest evaluation date in the table and includes this amount in column 1 of Schedule P, Part 2. For example, using Schedule P, Parts 2 through 4, Summary, of the 2017 and 2018 Annual Statements for Fictitious Insurance Company, we see that column 1 of the prior row in the 2011 Schedule P, Part 2, is equal to the sum of the following amounts in column 2 (labeled "2009") from the 2017 Annual Statement (USD in 000s).

TABLE 47

| **Data from 2017 Annual Statement** | **2009** | **Source** |
|---|---|---|
| Case outstanding: | | *Schedule P, Part 2 — Summary minus Part 3 — Summary minus Part 4 — Summary* |
| Prior Years row | 15,123 | *Line 1* |
| 2008 row | 3,745 | *Line 2* |
| Sum | 18,868 | |
| Bulk and IBNR: | | *Schedule P, Part 4 — Summary* |
| Prior Years row | 13,241 | *Line 1* |
| 2008 row | 3,886 | *Line 2* |
| Sum | 17,127 | |
| Total Unpaid: | | |
| Prior Years row | 28,365 | *Sum of above (case outstanding plus bulk and IBNR)* |
| 2008 row | 7,630 | *Sum of above (case outstanding plus bulk and IBNR)* |
| Sum | **35,995** | *Sum of above (case outstanding plus bulk and IBNR)* |
| **2018 Annual Statement** | **2009** | **Source** |
| Schedule P — Part 2 — Summary, Prior Years row | **35,994** | *Line 1* |

As displayed above, the amount in column 1 of the prior row in 2018 Schedule P, Part 2, Summary is $35,994[87].

Then, amounts in columns 2 and subsequent are equal to the ending reserves (case plus bulk plus IBNR reserves) as of each corresponding year-end, plus the paids from the corresponding prior row in Schedule P, Part 3. This is shown below for Fictitious:

[86] Minor differences due to rounding.
[87] Minor differences due to rounding.

TABLE 48

**Data from 2018 Annual Statement for Fictitious Insurance Company, Schedule P — Parts 2 through 4 — Summary**

**Prior Years Row, Net Loss & DCC**

| Years in Which Losses Were Incurred | 1<br>2009 | 2<br>2010 | 3<br>2011 | 4<br>2012 | 5<br>2013 | 6<br>2014 | 7<br>2015 | 8<br>2016 | 9<br>2017 | 10<br>2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Prior Paid from Part 3 | 000 | 9,061 | 13,830 | 18,110 | 21,281 | 23,728 | 26,341 | 27,752 | 29,108 | 30,210 |
| Prior Case Outstanding from Part 2 — Part 3 — Part 4 | XXX | 14,969 | 14,190 | 12,684 | 11,295 | 10,018 | 9,077 | 8,380 | 7,830 | 7,724 |
| Prior Bulk + IBNR from Part 4 | 17,126 | 14,330 | 13,764 | 12,807 | 12,285 | 11,632 | 10,529 | 9,752 | 8,907 | 8,088 |
| Total Prior Unpaid (Case + Bulk + IBNR) | | 29,299 | 27,954 | 25,491 | 23,580 | 21,650 | 19,606 | 18,132 | 16,737 | 15,812 |
| Prior Incurred Loss = Paid + Unpaid | 35,994 | 38,360 | 41,784 | 43,601 | 44,861 | 45,378 | 45,947 | 45,884 | 45,845 | 46,022 |

**Data from 2018 Annual Statement for Fictitious Insurance Company, Schedule P — Part 2 — Summary**

**Incurred Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)**

| Years in Which Losses Were Incurred | 1<br>2009 | 2<br>2010 | 3<br>2011 | 4<br>2012 | 5<br>2013 | 6<br>2014 | 7<br>2015 | 8<br>2016 | 9<br>2017 | 10<br>2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Prior | 35,994 | 38,360 | 41,784 | 43,601 | 44,861 | 45,378 | 45,947 | 45,884 | 45,845 | 46,022 |

As displayed above, the case outstanding plus bulk plus IBNR reserves in the prior rows, derived from Parts 2 through 4, are summed and then added to the corresponding cumulative paids since 2010. This produces the “incurreds” on all prior accident years, as shown in Schedule P, Part 2.

All the examples above are provided for the Summary of Schedule P, Parts 2 through 4, with the calculation being the same for all of the lines of business in Parts 2A through 2T.

*Prior Years Row – Fictitious 2017 Annual Statement*

For completion, and so that a reconciliation can be made of the amounts shown in Table 48 for 2017, the following provides the prior years and 2008 rows from Schedule P, Parts 2 and 4 from Fictitious’ 2017 Annual Statement.

TABLE 49

**Data from 2017 Annual Statement for Fictitious Insurance Company,**
**Schedule P — Part 2 — Summary**
**Incurred Net Losses and Defense and Cost Containment Expenses Reported at Year-End**
**(000 omitted)**

| Years in Which Losses Were Incurred | 1<br>2008 | 2<br>2009 | 3<br>2010 | 4<br>2011 | 5<br>2012 | 6<br>2013 | 7<br>2014 | 8<br>2015 | 9<br>2016 | 10<br>2017 |
|---|---|---|---|---|---|---|---|---|---|---|
| Prior | 31,760 | 36,602 | 38,321 | 41,474 | 43,475 | 44,539 | 45,113 | 45,607 | 45,605 | 45,706 |
| 2008 | 15,976 | 15,927 | 16,574 | 16,844 | 16,661 | 16,856 | 16,799 | 16,875 | 16,814 | 16,673 |

**Data from 2017 Annual Statement for Fictitious Insurance Company,**
**Schedule P — Part 4 — Summary**
**Bulk and IBNR Net Losses and Defense and Cost Containment Expenses Reported at Year-End**
**(000 omitted)**

| Years in Which Losses Were Incurred | 1<br>2008 | 2<br>2009 | 3<br>2010 | 4<br>2011 | 5<br>2012 | 6<br>2013 | 7<br>2014 | 8<br>2015 | 9<br>2016 | 10<br>2017 |
|---|---|---|---|---|---|---|---|---|---|---|
| Prior | 14,550 | 13,241 | 11,605 | 11,986 | 11,610 | 11,089 | 10,606 | 9,506 | 8,852 | 8,191 |
| 2008 | 7,241 | 3,885 | 2,725 | 1,778 | 1,197 | 1,196 | 1,026 | 1,023 | 900 | 716 |

As a reminder, Part 3 from Fictitious' 2017 Annual Statement is shown in Table 46.

*Claim Counts*

Part 3 also provides the number of claims closed with and without loss payment in columns 11 and 12, respectively. These figures are provided only for those lines where this information is provided in Part 5 (see below); these figures are not shown in the Summary.

SCHEDULE P — PART 5

Part 5 is provided in the following three sections, which are provided by accident year as of the last 10 year-end evaluations on a direct plus assumed basis:

Section 1: Cumulative number of claims closed with loss payment
Section 2: Number of claims outstanding
Section 3: Cumulative number of claims reported

Part 5 is provided for the following lines of business:

A - Homeowners/Farmowners
B - Private Passenger Auto Liability/Medical
C - Commercial Auto Liability/Medical

D - Workers' Compensation
E – Commercial Multiple Peril
F – Section A[88] – Medical Professional Liability – Occurrence
F – Section B – Medical Professional Liability – Claims-Made
H – Section A – Other Liability – Occurrence[89]
H – Section B – Other Liability – Claims-Made
R – Section A – Products Liability – Occurrence
R – Section B – Products Liability – Claims-Made
T – Warranty

No summary is provided for Part 5.

As noted, claim counts can assist the user in identifying trends or changes in the way claims are settled and reserved. However, caution should be made in relying solely on the analytics without discussion with company management, ideally management within the claims department of the insurance company. There is inconsistency in the way that companies record and report claim counts, and sole reliance on the data without confirmation with management can be misleading. One known inconsistency is that some companies record claims on a per-claim basis and others on a per-claimant basis. As we shall see later in this chapter, the Interrogatories of Schedule P require that companies disclose the method for recording claim counts.

Actuaries can derive many statistics from the data contained in Part 5. In the following paragraphs we discuss the most common claim count statistics used by actuaries, as well as other uses of Part 5.

*Claim Closure Rates*

These represent the ratio of closed claims to total reported claims. The ratio can be computed as all closed claims, or only those claims closed with payment, divided by reported claims. This relationship, in particular when viewed in the current accident year in comparison to prior accident years during the first 12 months of a development, helps to identify any changes in the rate at which claims are settled (closed).

We often hear claims adjusters say, "The best claim is a closed claim," the reason being that the longer a claim stays open, the greater the likelihood it will develop adversely and cost the insurer more money. A closed claim significantly reduces that potential, in most cases to zero.[90] Closed claims also benefit the insured by allowing the insured to receive medical treatment, repair damaged property and recover

[88] The line of business section headings change from 1 and 2 to A and B in Part 5, due to the naming of Sections 1 through 3 herein.
[89] Business reported as an aggregate write-in for other lines of business in the State Page is included here (either as occurrence or claims-made, depending on the coverage written).
[90] There is always the chance that a claim could reopen.

from the loss. Claims departments look for ways to increase claim settlement rates to achieve this mutual benefit.

Despite the benefits of such improvements, they can have an adverse effect on the projection of unpaid claims if not explicitly taken into consideration. Take for example the situation where a company has implemented a new strategy to increase claim settlement rates in the current year. This will result in higher than average claim payments being made in the current year and will cause the paid loss development factors at the latest evaluation date (i.e., last diagonal) to be higher than in prior evaluation dates along the diagonals. Giving weight to this higher factor in the application of loss development factors to paid losses (that are themselves higher than normal) will result in the over-projecting of ultimate losses and therefore the overestimate of unpaids.

Similarly, a claims department may also experience a reduction in claim settlement rates for numerous reasons, such as reductions in staffing levels, growth in a book without a commensurate increase in claim staff, or influx of claims resulting from the occurrence of a catastrophe, among others. A reduction in claim settlement rates could result in underestimating unpaid claims because the last diagonal of loss development factors and current evaluation of paid losses are suppressed relative to prior years.

A review of claim closure rates will help to identify these trends, thereby enabling the actuary to consider the impact on the analysis of unpaid claims.

Table 50 shows the triangle of claim closure rates for Fictitious' homeowners line of business.

TABLE 50

**Data from 2018 Annual Statement for Fictitious Insurance Company,**
**Data from Schedule P — Part 5A — Homeowners/Farmowners**

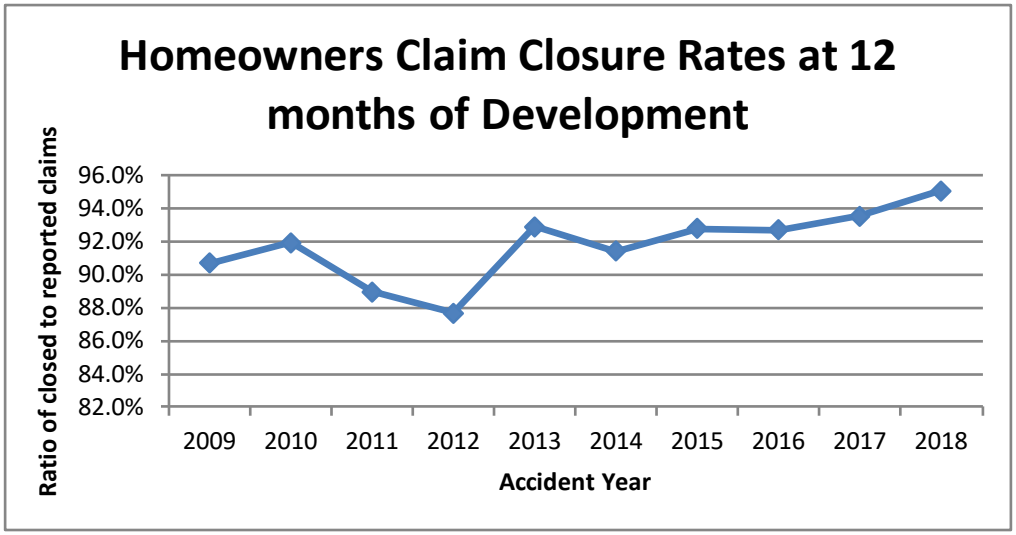
**Calculation of Claim Closure Rate (Total Claims Closed from Section 3 minus Section 2, divided by Total Reported Claim Counts from Section 3)**

| Years in Which Losses Were Incurred | 12 Months | 24 Months | 36 Months | 48 Months | 60 Months | 72 Months | 84 Months | 96 Months | 108 Months | 120 Months |
|---|---|---|---|---|---|---|---|---|---|---|
| 2009 | 90.7% | 97.9% | 98.8% | 98.8% | 99.2% | 99.6% | 99.6% | 99.6% | 99.6% | 99.6% |
| 2010 | 91.9% | 98.4% | 99.2% | 99.6% | 99.6% | 99.6% | 99.6% | 99.6% | 99.6% | |
| 2011 | 88.9% | 97.7% | 99.1% | 99.5% | 99.5% | 99.5% | 99.5% | 99.5% | | |
| 2012 | 87.7% | 98.1% | 98.6% | 99.5% | 99.5% | 99.5% | 99.5% | | | |
| 2013 | 92.9% | 98.6% | 99.5% | 99.5% | 99.5% | 99.5% | | | | |
| 2014 | 91.4% | 98.4% | 99.0% | 99.5% | 99.5% | | | | | |
| 2015 | 92.8% | 98.7% | 99.3% | 99.7% | | | | | | |
| 2016 | 92.7% | 99.0% | 99.7% | | | | | | | |
| 2017 | 93.6% | 99.1% | | | | | | | | |
| 2018 | 95.1% | | | | | | | | | |

The above was computed by taking total reported counts in Section 3 of Part 5A and subtracting the open counts in Section 2 to compute a triangle of closed counts. We then took the resulting closed count triangle and divided by the reported count triangle in Section 3.

Depending on the line of business, generally, only the first two to three columns are relevant to the actuary, as claim adjusters tend to have the biggest impact on claim settlement in the first couple of years of development. After that, it is often difficult to have a widespread effect on the open claims. For a short-tailed line of business such as homeowners, actuaries will tend to focus on the first 12 months in the above triangle. The following provides a graphic depiction of the first 12 months of settlement rates.

TABLE 51




From the chart we see a slight uptick in the claim settlement rates since 2016. While the change is relatively benign, it would be important to talk to Fictitious' management to see if there are any internal or external changes than might impact the rate at which homeowners claims are being settled. Additionally, it would be interesting to inquire as to the changes that occurred in 2011 and 2012, as there appears to have been a large drop in the rate at which claims were being closed. If, for example, there was an uptick in weather-related claims during 2012, it may be that Fictitious' claims department had some difficulties keeping pace with the large number of claims reported during 2012.

*Closed With Pay (CWP) Ratios*

These represent the ratio of CWP claims to total closed claims. Companies may experience changes in the rate that claims are closed without payment. It is important for the actuary to understand the implications of changes in CWP rates on the unpaid claim analysis. While an increasing trend in CWP rates is generally a good sign, it may result in increases in reopened claims in the future or have other effects that are not easily discernible in the loss data.

Table 52 provides the ratio of claims closed without payment to total closed claims for Fictitious. While we can show the ratio of CWPs as well, which is simply one minus the ratios shown within Table 52, we thought the ratios of closed without pay more clearly highlights some changes in the Company's experience.

TABLE 52

**Data from 2018 Annual Statement for Fictitious Insurance Company,**
**Data from Schedule P — Part 5A — Homeowners/Farmowners**
**Ratio of Claims Closed Without Payment to Total Closed Claims**

| Years in Which Losses Were Incurred | 12 Months | 24 Months | 36 Months | 48 Months | 60 Months | 72 Months | 84 Months | 96 Months | 108 Months | 120 Months | 120 Months |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2009 | 1% | 16% | 15% | 15% | 15% | 15% | 16% | 16% | 16% | 16% | |
| 2010 | 14% | 14% | 14% | 14% | 14% | 13% | 13% | 13% | 13% | | |
| 2011 | 16% | 16% | 16% | 16% | 16% | 16% | 16% | 16% | | | |
| 2012 | 13% | 13% | 13% | 13% | 13% | 13% | 12% | | | | |
| 2013 | 9% | 9% | 9% | 9% | 9% | 9% | | | | | |
| 2014 | 8% | 9% | 8% | 8% | 8% | | | | | | |
| 2015 | 8% | 8% | 8% | 8% | | | | | | | |
| 2016 | 9% | 9% | 9% | | | | | | | | |
| 2017 | 8% | 8% | | | | | | | | | |
| 2018 | 6% | | | | | | | | | | |

As displayed above, there appears to have been a drop in claims closed without pay between the 2011 and 2013 accident years from around the 15% level at 12 months of development to about the 8% level for accident years 2013 through 2017 at 12 months. There seems to be a further decline in accident year 2018, although to a much lesser degree. Inquiries would have to be made of company management to understand the cause for these trends and ascertain the impact on future loss and LAE development.

*Claim Frequency*

The rate of claim frequency can be determined using Schedule P data by dividing claim counts in Part 5 by earned premiums in Part 1. This can be useful in identifying changes in the rate claims are closed and reported relative to the exposure. However, we note that the exposure here is influenced by rate changes. Therefore, similar to loss ratios, these rates can go up or down depending on pricing changes. Schedule P does not provide the raw exposure base (e.g., home years for homeowners, car years for auto, payroll or employee count for workers' compensation). As a result, one cannot identify pure loss cost trends using this data without making manual adjustments for changes in rate.

*Average Claim Severities*

In addition to providing statistics based solely on counts, the actuary can also analyze severities using the loss data from Parts 2 through 4 and the count data in Part 5. The actuary can analyze the following:

- Average closed claim severities, which are computed as the ratio of net paid loss and DCC to direct plus assumed claims closed with payment (or total closed claim counts). The numerator in

the equation comes from Schedule P, Part 3, and the denominator comes from Schedule P, Part 5, Section 1 (or Section 3 minus Section 2 for total closed claim counts).

- Average case outstanding severities, which are computed as the ratio of net case outstanding loss and DCC to direct plus assumed open counts. The numerator in the equation comes from Schedule P, Part 2 minus Part 3 minus Part 4, and the denominator comes from Schedule P, Part 5, Section 2.
- Average reported claim severities, which are computed as the ratio of net reported loss and DCC to direct plus assumed reported counts. The numerator in the equation comes from Schedule P, Part 2 minus Part 4, and the denominator comes from Schedule P, Part 5, Section 3.

The above enables the actuary to identify trends in the cost of insurance claims. Such trends may be inflationary, a result of law changes, attributed to one-time catastrophic claims, due to changes in deductibles or retentions, or caused by internal factors, among others.

As with claim counts, actuaries generally look for changes in the first few years of development, as these changes tend to have the biggest impact on reserve levels.

A review of average case reserves is particularly useful to the reserving actuary. Changes in case reserve levels may be a sign that the company has strengthened or weakened its case reserves. For example, if we were to compute a triangle of average case outstanding severities and observe a decrease along the last diagonal relative to the prior diagonal, then that may be a sign that the company has weakened its case reserves.[91] Of course, this observation would warrant discussion with the company's claims department. However, assuming there was a weakening in case reserves, use of the reported loss development method to project unpaid loss, without adjustment to reflect the weakening, may understate the reserve need.

To be more specific, loss development methods assume that the past is predictive of the future. When a company weakens reserves, the reported losses are at a lower level than they had been at the past. Therefore, application of prior average loss development factors to current, lower loss amounts, will tend to understate the ultimate loss estimate and therefore the reserve need. The effect is similar to what happens to development methods using paid loss data when there has been a change in the rate claims are being closed. A decrease in claim settlement rates (i.e., "slowdown") along the last diagonal will result in an understatement of the reserve need absent adjustment to the paid loss triangle or paid loss development methods. The opposite can happen when there has been a strengthening in case reserves or a speed-up in claim settlement. While not the topic of this publication, there are loss

[91] The last diagonal represents average case outstanding reserves corresponding to the accident years in the left most column, as of the current evaluation date, which is December 31, 2018 for Fictitious. The prior diagonal is one year prior to the current evaluation (i.e., December 31, 2017 for Fictitious).

reserving methods that explicitly adjust for changes in case reserve adequacy and claim closure rates, such as those described in the Berquist-Sherman paper.[92]

Table 53 provides the average case outstanding reserves for Fictitious' homeowners line of business:

TABLE 53

**Data from 2018 Annual Statement for Fictitious Insurance Company,**
**Data from Schedule P — Parts 2 through 5 — Homeowners/Farmowners**

**Average Net Case Outstanding Loss and DCC Severities**
**(Net Case Outstanding Loss and DCC / Open Claim Counts)**

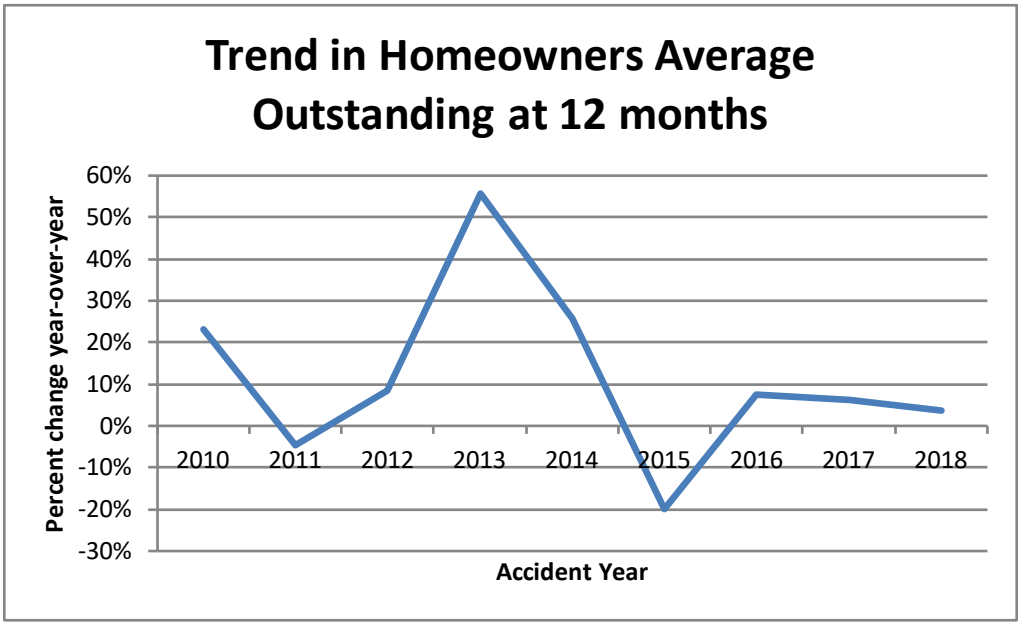
| Years in Which Losses Were Incurred | 12 Months | 24 Months | 36 Months | 48 Months | 60 Months | 72 Months | 84 Months | 96 Months | 108 Months | 120 Months | 120 Months |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2009 | 7,350 | 10,800 | 10,677 | 6,000 | 5,000 | 7,000 | 5,000 | 2,000 | 1,000 | — | |
| 2010 | 9,053 | 16,750 | 19,000 | 21,000 | 12,000 | 7,000 | 5,000 | 2,000 | 1,000 | | |
| 2011 | 8,636 | 18,600 | 23,500 | 25,000 | 14,000 | 9,000 | 5,000 | 2,000 | | | |
| 2012 | 9,360 | 13,750 | 8,667 | 9,000 | 11,000 | 12,000 | — | | | | |
| 2013 | 14,571 | 30,333 | 45,000 | 26,000 | 15,000 | 8,000 | | | | | |
| 2014 | 18,333 | 37,000 | 30,500 | 34,000 | 18,000 | | | | | | |
| 2015 | 14,684 | 32,250 | 37,500 | 40,000 | | | | | | | |
| 2016 | 15,789 | 42,000 | 61,000 | | | | | | | | |
| 2017 | 16,789 | 41,333 | | | | | | | | | |
| 2018 | 17,429 | | | | | | | | | | |
| | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Ending | | | 10,966 | 10,844 | 11,243 | 14,833 | 17,920 | 17,071 | 17,774 | 19,194 | 18,909 |
| Annual Trend | | | | -1% | 4% | 32% | 21% | -5% | 4% | 8% | -1% |

The bottom row shows the trend across all accident years combined, over each evaluation year. We see that in 2016 and 2017, average reserve levels increased by about 4% and 8%, respectively. However, in 2018, reserve levels decreased by 1%. As a result of this decline, the actuary may see ultimate loss and DCC estimates based on reported methods coming in lower than the ultimate loss and DCC estimates based on paid methods.

Looking down the column at the first 12 months, we see a significant increase in case reserve between 2012 and 2013. This is a bit more obvious graphically. The following provides the change in average case reserves, from one accident year to the next, going down the 12-month development column.

TABLE 54

[92] Berquist, J.R.; and Sherman, R.E., "Loss Reserve Adequacy Testing: A Comprehensive, Systematic Approach," Proceedings of the Casualty Actuarial Society (PCAS) LXIV, 1977, pp.123-184.




A large spike is seen in 2013. The approximate 56% increase was computed by taking the average case outstanding severity for accident year 2013 of $14,571 and dividing by the average for accident year 2012 of $9,360 to obtain the year-over-year change of 1.56 (+56%).

Despite the large increase in 2013 and subsequent sharp decline in 2015, the year-over-year trend rates in the first 12 months of development appear to have been on a slight decline from 8% to 4% between 2016 and 2018.

As previously mentioned, the value of these analytics is to identify trends and generate discussion with management so that the actuary can appropriately consider them in the analysis of unpaid claims.

*Reasonableness Tests*

In addition to the raw trends, actuaries also use Part 5 data to provide checks on the reasonableness of unpaid claim estimates. For example, actuaries can compute the following statistics and compare the results to see if the trends across the accident years are in alignment with what they expect:

- Average claim frequency — the ratio of the ultimate claim count estimate by accident year to the corresponding earned premium
- Average ultimate severity — the ratio of the ultimate loss and DCC estimate by accident year to the corresponding estimate of ultimate claim counts
- Average unpaid claim severity — the ratio of the unpaid loss and DCC estimate by accident year to the corresponding estimate of unpaid claims

The above can be computed using direct plus assumed loss and DCC estimates in addition to the net estimates.

*Uses of Part 5 in Estimating Unpaid Claims*

Before turning to Part 6, we should add that actuaries also use Part 5 for purposes of projecting ultimate loss and DCC estimates. These methods are referred to as "counts and averages" methods. Projections are made by developing average paid and reported loss severities to ultimate and applying them to estimates of ultimate claim counts using closed and reported claims count development methods. These methods can be valuable when adjusting for observed trends in each of their specific components.

SCHEDULE P — PART 6

Part 6 provides cumulative premiums earned as of December 31 for each of the last 10 calendar years. The first year of report includes premiums earned in the calendar year. Moving left to right, subsequent years show premiums earned after positive or negative adjustments from premium audits, retrospectively rated policies, lags in reporting or accounting for premiums, among others. Part 6 provides the information needed to develop earned premium to its ultimate amount using methods similar to those used to develop ultimate loss and DCC (i.e., using traditional, triangular development methods). Part 6 is provided for the following lines of business, as these lines tend to be the ones subject to the aforementioned adjustments:

C – Commercial Auto Liability/Medical
D – Workers' Compensation
E – Commercial Multiple Peril
H – Section A – Other Liability – Occurrence[93]
H – Section B – Other Liability – Claims-Made
M - International
N – Reinsurance – Nonproportional Assumed Property[94]
O – Reinsurance – Nonproportional Assumed Liability[95]
P – Reinsurance – Nonproportional Assumed Financial Lines[96]
R – Section A – Products Liability – Occurrence
R – Section B – Products Liability – Claims-Made

[93] Business reported as an aggregate write-in for other lines of business in the State Page is included here (either as occurrence or claims-made, depending on the coverage written).
[94] Property includes fire, allied, ocean marine, inland marine, earthquake, group, credit and other A&H, auto physical damage, boiler and machinery, burglary and theft and international property.
[95] Liability includes farmowners, homeowners and commercial multiperil; medical professional liability workers' compensation; other liability; products liability; auto liability; aircraft (all peril); and international liability.
[96] Financial includes financial guaranty, fidelity, surety, credit and international financial.

The premium displayed in Part 1 of Schedule P is that which is earned during each specified calendar year; it is not updated for subsequent adjustments to the specified exposure year premium. It is equal to the left-most diagonal in Part 6 plus adjustments that come through during the specified calendar year to premiums on prior exposure years. Adjustments made after the first year of report are included in the appropriate column of Part 6.

Workers' compensation provides a good example of a line that is subject to premium adjustment. At inception, the premium charged for a workers' compensation policy is determined by applying a rate to an estimate of the payroll (exposure) for the policy term. At the end of the year, or shortly thereafter, the actual payroll is known. The insurance carrier, however, has determined its premium earnings on the basis of the estimated premium. As a result, the premium figure will change from its initial amount, and this change is recorded in Part 6.

Additionally, the exposure base used to determine the premium can be subject to audit by the insurance carrier. For example, an insurance company can verify that payroll amounts used in determining an insured's workers compensation premium, or revenue figures used in computing an insured's general liability premium, are accurate and complete. Differences uncovered through these audits will emerge as premium development in Part 6.

The one area where we tend to see the most development on earned premium is retrospectively rated insurance policies. Under these policies, the insured is charged a base premium that is adjusted over time based on the insured's loss experience based on a formula. The formula incorporates tax multipliers and expense factors and typically imposes a minimum and maximum premium amount.

Insurance companies record the claim experience associated with retrospectively rated insurance policies within Schedule P, and the loss reserve estimates typically include a provision for these claims. Without adjustment for the additional premium income expected under these policies, a company's surplus would be understated. This adjustment comes in as an asset on line 15.3 of page 2 of the Annual Statement titled "Accrued Retrospective premium."

Estimates of future premium can be determined by developing the earned premiums in Part 6 using development methods. However, as with reliance on the rest of Schedule P for projection purposes, exclusive reliance on Part 6 should not be made without having a good understanding of its contents.

SCHEDULE P — PART 7

Part 7 is optional and completed only by those companies using the loss sensitive adjustment in the RBC calculation. It provides premium and loss information on loss sensitive contracts. It is broken into two parts: A for Primary Contracts (i.e., direct written business) and B for Reinsurance Contracts (i.e., assumed business). Parts A and B each have the same five sections:

- Section 1 provides net loss and LAE unpaid and net written premium on loss sensitive contracts, relative to all contracts written by the company, for each Schedule P line of business in total.

- Section 2 provides incurred loss and DCC reported at year-end on loss sensitive contracts in the same format as Schedule P, Part 2.
- Section 3 provides loss and DCC IBNR at year-end on loss sensitive contracts in the same format as Schedule P, Part 4.
- Section 4 provides net earned premiums reported at year-end on loss sensitive contracts in the same format as Schedule P, Part 6.
- Section 5 provides net reserves for premium adjustments and accrued retrospective premiums for each of the last 10 years in which the policies were issued, evaluated at each of the last 10 years.

The information provided in Part 7 is on a policy year basis.

As noted, the primary use of this exhibit is for RBC purposes. The Reserve RBC and Written Premium RBC are adjusted to reflect the fact that loss experience under loss sensitive contracts is shared in whole or in part with the insured. As such, the risk of adverse loss development is also shared with the insured. The insurance company receives a discount to its RBC reserve charge to reflect this reduction in risk. This discount is computed separately by line of business. Columns 3 and 6 of Schedules A and B provide the percentage of loss and LAE reserves and written premiums by line of business for loss sensitive contracts. Column 3 provides the distribution of reserves, and column 6 provides the distribution of net written premium.

Examples of how this information is used in computing RBC are contained in Part IV. *Statutory Filings to Accompany the Annual Statement* of this publication.

SCHEDULE P INTERROGATORIES

The Schedule P Interrogatories are a series of seven questions that the insurance company is required to answer to provide further insight into the information reported in Schedule P. We will briefly discuss those interrogatories that are most widely referred to by property/casualty actuaries.

Question 1 pertains to extended reporting endorsements (EREs) arising from death, disability or retirement (DDR). EREs essentially turn a medical professional liability claims-made policy into an occurrence policy upon the policyholder's death, disability or retirement. In the 1990s, DDR endorsements were issued for free and known as "free tail coverage" as a marketing effort by medical insurers to attract physicians. Many such DDR extended reporting period endorsements are still offered for free.

Question 1 has six parts, the first of which pertains to whether the company issues such endorsements for free or at a reduced rate. The remaining five parts serve to identify where and how the company reports the DDR reserve: as unearned premium or loss reserve, claims-made or occurrence, etc. The main point is to make sure these policies have been reserved for somewhere in the company's financial statements, either as losses or unearned premium.

Question 2 asks whether LAE are reported as DCC and A&O as per the definitional change effective January 1, 1998. This is relevant to the actuary or other user who may be relying on Schedule P data to perform reserve adequacy tests.

Question 4 requires disclosure on whether the company's recorded loss and LAE reserves are net of non-tabular discount and reminds the preparer of the Annual Statement that:

- Disclosure of non-tabular discount must be included in the Notes to Financial Statements.
- Discounting is only allowed if the company has permission from its state insurance regulator.
- Schedule P must be prepared gross of non-tabular discounts, with the amount of discount reported in Schedule P – Part 1, Columns 32 and 33.
- Support for the amount of discount must be available for regulatory review upon request.

In question 6, the company is required to indicate whether the company reports claim counts on a per-claim or per-claimant basis in Schedule P. This, along with whether the reporting convention has changed over time, is relevant in interpreting trends in claim frequency and severity. It is also relevant when assessing reserve adequacy using counts and averages (frequency and severity) methods.

Question 7 is the most important and aligns most directly with the use of Schedule P. It asks if there are any changes or if there is anything special that the user should be aware of if the user decides to rely on the data provided in Schedule P to assess the adequacy of the recorded loss and LAE reserves. If the answer is yes, disclosure of such is required.

INTERCOMPANY POOLING AND SCHEDULE P

It is important to know that intercompany pooling differs from intercompany reinsurance.

According to SSAP No. 63, "Intercompany pooling arrangements involve establishment of a conventional quota share reinsurance agreement under which all of the pooled business is ceded to the lead entity and then retroceded back to the pool participants in accordance with their stipulated shares."[97] Under intercompany pooling, business underwritten by affiliated insurance companies is consolidated by the "lead" company and the premiums, losses and related expenses are shared based on a fixed and predetermined percentage per the agreement.

Intercompany reinsurance refers to a transaction whereby one company (the reinsurer) agrees to indemnify the other (the ceding company) against all or part of the loss that the latter may sustain under the policies that it has issued. Intercompany reinsurance is accounted for in the same way as third-party reinsurance, subject of course to statutory accounting rules. Very broadly, cessions to affiliated reinsurers under straight reinsurance agreements serve to reduce gross premiums, losses and related expenses.

[97] NAIC *Accounting Practices and Procedures Manual*, March 2019, SSAP No. 63, Underwriting Pools, page 63-3, paragraph 7.

The treatment of intercompany pooling in Schedule P is different from that of a typical reinsurance agreement. Gross losses are combined or "pooled" and then shared based on the pooling percentage of each member company, regardless of the policy issuing entity. Net losses are treated in the same manner in that they are first pooled and then shared based on each company's pooling percentage. Very simply, assume Companies A, B and C participate in intercompany pooling, with 60%, 20% and 20% participation, respectively. If each company has $100 of loss reserves on a direct basis and cedes $30 to outside reinsurers, the recorded reserves in Schedule P of Companies A, B and C would be $180, $60 and $60 on a gross of reinsurance basis and $126, $42 and $42 on a net of reinsurance basis, respectively. That is, the pooled gross ($300) and net amounts ($210) are shared based on each company's participation rates. This is summarized in Table 55.

TABLE 55

| Reporting in Schedule P | | | | |
|---|---|---|---|---|
| | **Company A (Lead)** | **Company B (Non-Lead)** | **Company C (Non-Lead)** | **Total** |
| Total Gross | 180 | 60 | 60 | 300 |
| Total Net | 126 | 42 | 42 | 210 |

While Schedule P for companies that operate under an intercompany pooling arrangement is prepared on a pooled basis, as exemplified above, other schedules and exhibits within the Annual Statement treat intercompany pooling as if it is a typical reinsurance arrangement. Therefore, using the above example, if Company A were the lead in the intercompany pool, then Company A would have $100 in direct loss reserves, plus $70 assumed from each of Companies B and C, for a total of $240 in gross reserves. The $70 in assumed loss reserves from each non-lead company is after cessions to outside reinsurance.

For each non-lead company, the amount of gross loss reserves is $100 in direct reserves plus the amount assumed after the lead company cedes through the intercompany reinsurance relationship. The amount of business in the intercompany pool is $300 of direct loss reserves minus $90 (=$30*3) of ceded business, for a total of $210 net reserves. The $210 pooled net loss reserve is shared 60%, 20%, 20%, so each non-lead gets $42. Thus, the total gross loss reserves for each non-lead is $100 in direct plus $42 of intercompany pooled loss reserves for a total of $142. These amounts are summarized in Table 56.

TABLE 56

| Reporting in Annual Statement Exhibits and Schedules other than P | | | | |
|---|---|---|---|---|
| | **Company A (Lead)** | **Company B (Non-Lead)** | **Company C (Non-Lead)** | **Total** |
| Total Gross | 240 | 142 | 142 | 524 |
| Total Net | 126 | 42 | 42 | 210 |

Notice that on a net basis, the amounts are the same in all of the exhibits and schedules within the Annual Statement. However, on a gross basis, exhibits and schedules other than Schedule P essentially double count the cessions to intercompany pooling, whereas Schedule P nets them out.

The fact that Schedule F does not show IBNR on an assumed basis, the double counting effect of pooling, as well as the fact that some companies have other intercompany reinsurance relationships outside the intercompany pooling relationship, complicates the reconciliation between Schedules within the Annual Statement to Schedule P. This is the main reason we have not used Fictitious in our examples.

We used loss reserves in our example. However, it is important to note that pooling percentages apply to the premium, loss, expense and claim count data within Schedule P. Therefore, all figures provided in Part 1 and the triangles provided in Parts 2 through 7 are provided after intercompany pooling. If one wanted to determine total premium, loss, expense and/or claim count data for the pool in aggregate, all one would need to do is divide the figures in Schedule P for a pool member by its intercompany pooling percentage in Schedule P, Part 1, column 34.

Intercompany pooling percentages can change over time, based on a particular group's business strategy. Schedule P is generally restated retroactively when there is a change in intercompany pooling.

Ignoring differences in underwriting expense structure, underwriting income for members of an intercompany pool is shared based on their respective pooling percentage. Each company will likely have its own underwriting expense structure, as well as structure for investment and other income, therefore policyholders' surplus will differ by company and may not align with the companies' particular pooling percentages. However, pooling percentages are generally determined with consideration of the level of policyholders' surplus at the legal entity level; in general, the larger the surplus, the greater the share.

As with reinsurance, companies use intercompany pooling for surplus relief. Under intercompany reinsurance, an individual company provides the relief. Under intercompany pooling, the members of the pool utilize the capital and surplus of all the companies, rather than each individual company.

Actuaries often think of intercompany pooling as advantageous over intercompany reinsurance, given that the unpaid claim analysis for both gross and net reserves can be calculated on pooled (combined) basis, as opposed to having to perform separate analyses of gross reserves for each entity. However, many companies use intercompany reinsurance as opposed to intercompany pooling.

In general, intercompany pooling should be easier to administer than having to maintain separate intercompany reinsurance agreements between affiliates. Over time, one table of pooling percentages can be updated as things change, therefore intercompany pooling can be more flexible. Intercompany pooling also makes it easier for a rating agency to review the financial condition of a group and assign a single rating. The group can then market its rating across all member underwriting companies. We expect that intercompany pooling would also facilitate regulatory review at a group level versus each individual company.

# PART IV. STATUTORY FILINGS TO ACCOMPANY THE ANNUAL STATEMENT

## INTRODUCTION TO PART IV

Insurance companies are required to file numerous documents with state insurance regulators each year, either included within or supplemental to the Property/Casualty Annual Statement. These annual filings include those listed in the Official NAIC *Annual Statement Instructions Property/Casualty,*[98] such as the Statement of Actuarial Opinion (SAO), Actuarial Opinion Summary Supplement (AOS), Supplemental Compensation Exhibit, Insurance Expense Exhibit (IEE), Supplemental Investment Risks Interrogatories, Financial Guaranty Insurance Exhibit and others such as the National Association of Insurance Commissioners (NAIC) Insurance Regulatory Information System (IRIS) ratio and Risk-Based Capital (RBC) calculation. Many of these filings serve as a means for regulators to obtain a relatively quick view of an insurance company's financial health, thereby enabling regulators to prioritize those insurance companies requiring immediate attention.

This section addresses the filings that tend to be used the most by property/casualty actuaries, namely:

- SAO
- AOS
- IEE
- RBC
- IRIS

We will discuss the purpose and important aspects of each filing. Many of these filings are addressed in considerable detail in other publications, and the NAIC has issued instructions, manuals and/or software applications that provide the preparer of these filings with authoritative guidance. This section is not intended to replace those readings or provide instructions on how to prepare those filings. Rather, we will limit our discussion to the purpose of each and a general overview of how they are prepared.

[98] *2018 NAIC Annual Statement Instructions Property/Casualty,* pages i-v.

## CHAPTER 16. STATEMENT OF ACTUARIAL OPINION

OVERVIEW

The Statement of Actuarial Opinion (SAO) provides the opinion of a qualified actuary on the reasonableness of the loss and loss adjustment expense (LAE) reserves recorded by a property/casualty insurance company as of December 31 each year. It is filed with the Annual Statement, either included or attached to page 1 of the Annual Statement. The SAO must be prepared by a qualified actuary, as defined by the National Association of Insurance Commissioners (NAIC),[99] who is appointed by the company's board and then referred to as the appointed actuary.[100]

Certain companies may qualify for an exemption from the SAO requirement. Possible exemptions include the following:

- Size of the insurer (less than $1 million of total gross written premiums during a calendar year and less than $1 million of total gross loss and LAE reserves at year-end)
- Insurers under supervision or conservatorship
- Nature of business written
- Insurers under financial hardship (if the cost of the SAO is greater than either 1% of surplus or 3% of gross written premiums during the calendar year within which the exemption is requested)

Simply meeting one of the above criteria does not provide automatic exemption. To qualify, the insurer has to file for exemption with its domiciliary commissioner. It is at the discretion of the domiciliary commissioner to decide whether to exempt a company from the SAO requirement.

The main purposes of the SAO are the following:

- Provide the appointed actuary's opinion on the reserves specified within the scope of the SAO.
- Inform the reader, in particular regulators, of significant risk factors and/or uncertainties with respect to those reserves.

[99] A qualified actuary is defined by the NAIC as "a person who meets the basic education, experience and continuing education requirements of the Specific Qualification Standard for Statements of Actuarial Opinion, NAIC Property and Casualty Annual Statement, as set forth in the *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States,* promulgated by the American Academy of Actuaries, and is either: (i) A member in good standing of the Casualty Actuarial Society, or (ii) A member in good standing of the American Academy of Actuaries who has been approved as qualified for signing casualty loss reserve opinions by the Casualty Practice Council of the American Academy of Actuaries" *2011 NAIC Annual Statement Instructions Property/Casualty*, page 9.

[100] The *2011 NAIC Annual Statement Instructions Property/Casualty* go on further by saying that the requirements of the company's domiciliary state may permit individuals to issue the SAO despite not meeting the definition of qualified actuary per the NAIC. In these instances, a letter from the state must be attached to the SAO indicating that the individual meets the state's requirement to issue SAOs. Throughout this text we will use the terms "qualified actuary" and "appointed actuary" to encompass these individuals.

- Advise whether those risks and uncertainties are reasonably expected to lead to material adverse deviation in the reserves.

There is considerable guidance for the actuary in issuing the SAO. Every appointed actuary should read and be familiar with the most current versions of the following:

- Qualification Standards, as set forth by the American Academy of Actuaries (AAA)
- NAIC Instructions for the SAO
- AAA Committee on Property and Liability Financial Reporting (COPLFR) *Practice Note on Statements of Actuarial Opinion on Property and Casualty Loss Reserves* (COPLFR P/C Practice Note)
- NAIC *Regulatory Guidance On Property and Casualty Statutory Statements of Actuarial Opinion* Prepared by the NAIC's Casualty Actuarial and Statistical (C) Task Force[101]
- Actuarial Standards of Practice (ASOP), including but not limited to:
    - ASOP No. 20. *Discounting of Property/Casualty Unpaid Claim Estimates* (September 2011)
    - ASOP No. 23. *Data Quality*
    - ASOP No. 36. *Statement of Actuarial Opinion Regarding Property/Casualty Loss and LAE Reserves*
    - ASOP No. 41. *Actuarial Communications*
    - ASOP No. 43. *Property/Casualty Unpaid Claim Estimates*
- Applicable state laws, in particular with respect to reserve requirements, SAO requirements, discounting, etc. (the Property/Casualty Loss Reserve Law Manual published annually by the AAA provides a compilation of this material) [102]
- SSAP No. 55, *Unpaid Claims, Losses and Loss Adjustment Expenses*
- SSAP No. 62R, *Property and Casualty Reinsurance*
- SSAP No. 65, *Property and Casualty Contracts*

The SAO is organized into four required sections:

1. Identification
2. Scope
3. Opinion
4. Relevant comments

Each section must be included and clearly identified within the SAO.

The SAO also contains two exhibits, A and B. Exhibit A provides the recorded amounts associated with the items identified in the scope section, generally on a direct plus assumed and net basis. Exhibit B provides relevant disclosure items with respect to the *net* reserves identified in the scope section, as

[101] This is updated annually and typically included as an appendix to COPLFR P/C Practice Note.
[102] Applicable laws and regulations supersede any applicable ASOPs.

identified in the relevant comments section. For example, loss and LAE reserves for asbestos are disclosed in Exhibit B on a net of reinsurance basis. There is no separate exhibit within the SAO showing asbestos reserves on a gross of reinsurance basis. Differences between the net and gross (direct plus assumed) amounts reported in Exhibit B may be discussed in the relevant comments section.

While there are other publications on the CAS Exam 6 U.S. Syllabus of Basic Education that cover the SAO, there is not a "real" SAO on the Syllabus to bring the instructions to life for the student. As a result, we have created a SAO for Fictitious Insurance Company to illustrate the application of the SAO instructions in practice. Fictitious' SAO was issued by an imaginary actuary named Mr. William H. Smith, who is a consulting actuary with the make-believe firm, WS Actuarial Consulting. Smith's opinion is included in of this publication and should be read side-by-side with this chapter.

The Fictitious SAO is the author's interpretation of the NAIC instructions as they might apply to Fictitious. It should not be taken as authoritative guidance on format or content of the SAO.

The following provides a summarized view of each of the four sections of the SAO and how Fictitious' appointed actuary responded to each required section in his 2018 SAO for the company.

IDENTIFICATION

The identification section of the SAO provides the actuary's name and credentials, the actuary's qualifications for issuing the SAO, the actuary's relationship to the company, and the date the actuary was appointed by the company's board of directors (or its equivalent) to issue the opinion. This section typically includes a statement identifying the intended purposes and users of the opinion, consistent with ASOP 36 requirements.

For Fictitious, the 2018 SAO was issued by Mr. William H. Smith, who is a Fellow of the Casualty Actuarial Society and Member, American Academy of Actuaries, and is associated with the firm of WS Actuarial Consulting. He was appointed by the company's board of directors on September 7, 2018. At the time of issuance of his opinion (February 24, 2019), Smith met the qualification standards to issue SAOs.

The intended purpose of Smith's opinion was to satisfy the requirements of the NAIC. The intended users were the company's management, the directors of its board and state regulatory officials.

SCOPE

The scope section identifies the reserve items upon which the actuary is giving an opinion as well as the accounting basis for those reserves. The reserve items include:

- Loss and LAE reserves
- Retroactive reinsurance assumed reserves

- Unearned premium reserves for Property and Casualty ("P&C") Long-Duration Contracts[103]
- Unearned premium reserves for extended reporting endorsements, such as those included in Schedule P Interrogatory No. 1 of the company's Annual Statement
- Other reserve items for which the actuary is providing an opinion

The scope also identifies the "review date," which is defined in ASOP 36 as "the date (subsequent to the valuation date) through which material information known to the actuary is included in forming the reserve opinion."[104] If no such date is explicitly disclosed, it is likely to be assumed by the reader of the opinion that the review date is the date the opinion is signed.

It also contains a statement regarding who provided the data relied upon by the actuary in forming the opinion and that either the actuary performed a reconciliation of that data, or reviewed a reconciliation prepared by the company, to Schedule P of the company's Annual Statement.

If the company participates in intercompany pooling, the actuary *may wish* to disclose this and the basis for reconciling data used in the actuary's analysis to Schedule P.

Further, regulatory guidance suggests that the scope section for each pooled company provide information about the pooling arrangement, including the intercompany pooling percentage for the company.

There are special requirements for opinions on non-lead companies operating under an intercompany pooling arrangement in which the lead company retains 100% of the pooled reserves. We refer the reader to the NAIC opinion instructions and COPLFR Practice Note for further guidance.

The reserve items on which Smith opined for Fictitious are presented in Exhibit A of his 2018 SAO. As displayed on Exhibit A, Smith opined on net loss and LAE reserves in lines 1 and 2, totaling $51,557,000 as of December 31, 2018. The amounts in lines 1 and 2 of Exhibit A reconcile to lines 1 and 3, respectively, of the Liabilities, Surplus and Other Funds page of the 2018 Annual Statements.

Smith also opined on total direct plus assumed (or gross) loss and LAE reserves of $61,699,000, as shown in lines 3 and 4. The amounts in lines 3 and 4 reconcile to Schedule P, Part 1, Summary, columns 13 plus 15, and columns 17, 19 and 21, respectively.

[103] P&C Long Duration Contracts are defined on page 10 of the NAIC SAO Instructions as "contracts (excluding financial guaranty contracts, mortgage guaranty contracts and surety contracts) that fulfill both of the following conditions: (1) the contract term is greater than or equal to 13 months; and (2) the insurer can neither cancel the contract not increase the premium during the contract term. These contracts are subject to the three tests of *SSAP No. 65-Property and Casualty Contracts* of the NAIC *Accounting Practices and Procedures Manual*."

[104] Actuarial Standards Board of the American Academy of Actuaries, "Actuarial Standard of Practice No. 36, Statements of Actuarial Opinion Regarding Property/Casualty Loss and Loss Adjustment Expense Reserves," December 2010, page 3.

As disclosed in the Notes to Financial Statements (see Chapter 10. *Notes to Financial Statements*) and displayed in Exhibit A of the SAO, Fictitious did not have any retroactive reinsurance assumed as of December 31, 2018. Nor were there any other loss reserve items on which Smith expressed an opinion.

Smith disclosed his "review date" as January 28, 2019. This means that information received through January 28, 2019, was relevant to his analysis of unpaid claims and his opinion on the company's loss and LAE reserves. Information after that date, to the time he signed the opinion on February 24, 2019 (see the signature line of the opinion), was not relied on by Smith in forming his opinion.

The scope section also provides a statement from Smith that he reconciled the data that he relied upon for purposes of forming his opinion to Schedule P, Part 1, of Fictitious' 2018 Annual Statement.

OPINION

The opinion section provides exactly what the name says, the actuary's opinion with respect to the reserves identified in the scope section. The actuary has five options in terms of the type of opinion, as outlined in ASOP 36. These are:

1. Reasonable: if the recorded reserve lies within the actuary's range of reasonable unpaid claim estimates
2. Inadequate or deficient: if the recorded reserves are below what the actuary deems to be reasonable
3. Excessive or redundant: if the recorded reserves are above what the actuary deems to be reasonable[105]
4. Qualified: if the actuary is unable to issue an opinion on certain items and those items are believed to be material
5. No opinion: if the actuary is unable to conclude on the reasonableness of the recorded reserves

Note that in accordance with ASOP 36, the actuary should disclose the minimum amount that he or she deems reasonable when issuing an inadequate or deficient opinion.[106] Similarly, the actuary should disclose the maximum amount deemed to be reasonable when issuing an excessive or redundant opinion.

The actuary is also required to state whether the recorded reserves identified in the scope section meet the requirements of the insurance laws of the state the company is domiciled in and are computed in accordance with actuarial standards.

Additionally, if use was made of the work of another actuary, such as for pools and associations, for a subsidiary, or for special lines of business, in forming the SAO, the other actuary must be identified by name and affiliation within the opinion section. The appointed actuary cannot simply rely on another

[105] Ibid., page 9.
[106] Ibid., page 10.

actuary's opinion. The appointed actuary needs to perform enough analysis on the other actuary's work to issue an unqualified opinion on the total reserve amounts listed in Exhibit A. A situation where the actuary may make use of another's work is for reserves assumed by the company for its participation in underwriting pools and associations. ASOP No. 36 provides the relevant guidance, and the COPLFR P/C Practice Note provides good examples of how to handle this situation in practice.[107]

The 2018 SAO for Fictitious states the following:

"In my opinion, the amounts carried in Exhibit A on account of the items identified:

- Make a reasonable provision for all unpaid losses and loss adjustment expenses, gross and net as to reinsurance ceded, under the terms of the Company's contracts and agreements
- Are computed in accordance with accepted standards and principles
- Meet the requirements of the insurance laws of Florida"[108]

Note that Smith opined on the loss and LAE reserves in Exhibit A, items 1 through 6. These reserves include "Retroactive Reinsurance Reserve Assumed," which in the case of Fictitious totaled $0.

Unless otherwise disclosed, the Appointed Actuary will generally opine on the loss and LAE reserves including the amount of retroactive reinsurance assumed, despite the fact that the amount of retroactive reinsurance is not accounted for within lines 1 and 3 of page 3 of the Annual Statement under SAP. This treatment is in accordance with the NAIC instructions. Retroactive reinsurance assumed is a liability, and regulators look for assurance that this balance is reasonable.

The reserves for retroactive reinsurance ceded are not separately listed on Exhibit A and are therefore not explicitly opined on by the actuary. The absence of this reserve from Exhibit A is not because regulators don't care about the reasonableness of the balance. Rather, the reserve for retroactive reinsurance ceded is already included as a component of the gross loss and LAE reserves, which are opined on by the actuary.[109] An overstatement or understatement of retroactive reinsurance ceded would impact gross and ceded reserves equally and have no impact on the net reserve balance.

RELEVANT COMMENTS

The relevant comments section provides commentary and disclosures relative to the reserves opined on to assist the reader in understanding the context and composition of those reserves. Commentary is required on the following items:

[107] Committee on Property and Liability Financial Reporting, American Academy of Actuaries, "Property and Casualty Practice Note, Statements of Actuarial Opinion on P&C Loss Reserves as of December 31, 2018," page 55.
[108] See Appendix I of this publication for the Statement of Actuarial Opinion for Fictitious Insurance Company.
[109] Recall from Chapter 10. *Notes to Financial Statements*, a company's gross reserves are not reduced for retroactive reinsurance ceded. Rather, retroactive reinsurance ceded is recorded separately as a write-in item on the balance sheet.

- The actuary's materiality standard for purposes of addressing the risk of material adverse deviation
- Significant risks and uncertainties that could result in material adverse deviation
- The significance of items listed in Exhibit B, including:
    - Anticipated net salvage and subrogation
    - Nontabular discounting
    - Tabular discounting
    - Net reserves for the company's share of voluntary and involuntary pools and associations
    - Net reserves for asbestos and environmental liabilities
    - Claims-made extended loss and LAE reserve reported as unearned premium and as loss reserves
- Retroactive or financial reinsurance
- Uncollectible reinsurance
- The results of IRIS ratios 11, 12 and 13 and explanation for exceptional values
- Changes in methods and assumptions from those employed in the most recent prior opinion that are deemed to have a material effect on the recorded reserve or actuary's unpaid claim estimate
- Unearned premium reserves for P&C Long Duration Contracts
- Net reserves for Accident and Health ("A&H") Long Duration Contracts that the company carries on the Liabilities, Surplus and Other Funds page as Losses, Loss Adjustment Expenses, Unearned Premium or other Write-In items (e.g., Premium Deficiency Reserves, Contract Reserves, or AG 51 Reserves)[110]

With respect to the risk of material adverse deviation, the NAIC Instructions require the appointed actuary to make an explicit statement as to whether or not he/she believes there are significant risks and/or uncertainties that could result in material adverse deviation.

Smith addresses the above items within the 2018 SAO for Fictitious, as applicable. We will not discuss each item but rather provide further details on some to assist in reading this section of the opinion.

MATERIALITY STANDARD

[110] "A&H Long Duration Contracts are defined on page 10 of the NAIC SAO Instructions as "contracts in which the contract term is greater than or equal to 13 months and contract reserves are required. See Schedule H instructions for a description of categories of contract reserves, as well as policy features that give rise to contract reserves. Two specific examples of contracts that typically require contract reserves are long-term care and disability income insurance." According to page 15 of the NAIC SAO Instructions, "*Actuarial Guideline LI—The Application of Asset Adequacy Testing to Long-Term Care Insurance Reserves* (AG 51) in the NAIC *Accounting Practices and Procedures Manual* requires a company to perform a stand-alone asset adequacy analysis for its in force long-term care (LTC) contracts with more than 10,000 in force lives as of the valuation date. The Actuarial Report and workpapers summarizing the results, assumptions and testing procedures for the asset adequacy testing of LTC business must be in compliance with AG 51 requirements."

There are numerous ways an actuary can establish his or her materiality standards, and examples are provided in the COPLFR Practice Note. Common methods are based on a percentage of reserves, surplus and movements in Risk-Based Capital (RBC) levels, among others. Materiality standards such as 10% of loss and LAE reserves or anywhere from 10% to 20% of surplus are commonly used. However, some actuaries establish materiality standards using a set dollar amount based on the actuary's particular knowledge of the company's operations. As an extreme example, for a company operating with limited surplus and/or under regulatory intervention, a deviation in loss and LAE reserves greater than $0 might be considered material.

Regardless, there is no "one size fits all" in terms of formulaic materiality standards. The standard is based on the actuary's personal opinion as to what he or she considers material in relation to the company's reserves and surplus.

Smith considered a deviation in net loss and LAE reserves of more than:

1. 10% of net loss and LAE reserves, which he calculated as:

   10% of $51.557 million = $5.156 million

2. 20% of policyholders' surplus, which he calculated as:

   20% of $31.024 million = $6.205 million

   Or

3. The reduction in surplus that would result in additional action per the NAIC RBC formula, which he calculated as the difference between the following:

   - The company's total adjusted capital of $31.024 million,[111] which produces an RBC ratio of 555% based on authorized control level (ACL) RBC of $5.588 million per the Five-Year Historical Data exhibit
   - Adjusted capital at the next RBC level of $11.176 million, which is equal to two times ACL

   The difference between $31.024 million and $11.176 million is $19.848 million.

For purposes of establishing his materiality standard, Smith selects the smallest of the three balances, which in this case happens to be 10% of net loss and LAE reserves ($5.156 million).

MAJOR RISK FACTORS

Once materiality is defined, the actuary determines whether there are significant risks or uncertainties that could result in material adverse deviation in the company's loss and LAE reserve. According to the

[111] Differences from above due to immaterial rounding errors that may occur in the Annual Statement.

NAIC instructions to the SAO, "If such risk exists, the actuary should include an explanatory paragraph to describe the major factors, combination of factors, or particular conditions underlying the risks and uncertainties that the actuary reasonably believes could result in material adverse deviation."[112] Examples of risk factors are provided in the COPLFR Practice Note.

Note that the actuary is not expected to list all risks that the company is exposed. Rather, only those major risk factors that could result in the reserves developing adversely by an amount that is material relative to the actuary's materiality standard. To illustrate, Smith identifies and provides details about major risk factors that materially affect the variability of the reserves held by Fictitious Insurance Company. The major risk factors identified are mass tort claims; so-called "Chinese drywall" claims; cumulative injury losses; claims from large deductible workers' compensation policies; and claims related to catastrophic weather events, including wildfires, tornadoes and hurricanes. The uncertainty associated with these types of claims adds to the variability in the company's recorded reserves.

## RISK OF MATERIAL ADVERSE DEVIATION

The actuary is required to make a clear statement within the SAO as to whether or not there are significant risks or uncertainties that could result in material adverse deviation. That determination is based on the major risk factors identified by the actuary, the actuary's professional opinion of the variability inherent in the unpaid claim estimates and the actuary's materiality standard.

In the case of Fictitious, Smith concludes that there are significant risks that could result in the net reserve amount deviating adversely from that recorded by the company by a material amount. This conclusion was determined in part quantitatively, by comparing the distance between the company's net recorded loss and LAE reserve and the high end of Smith's range to his materiality standard.

As shown in the Smith's Actuarial Opinion Summary for the company, he has developed a range of reasonable unpaid loss and LAE claim estimates on a net of reinsurance basis of $43 million to $57 million with a point estimate of $50 million. The distance between the company's recorded reserve of $51.556 million and the high end of Smith's range is $5.443 million. Smith's materiality standard is $5.156 million, which is less than the distance between the high end of his range and the recorded reserve. This means that a deviation of $5.156 million is reasonably expected by Smith, as it lies within his range relative to the recorded balance. The compilation of these figures is shown in Table 57.

TABLE 57

| | WS Actuarial Consulting | | | | Carried + |
|---|---|---|---|---|---|
| | | | | Fictitious | Materiality |
| | Low | Point | High | Carried | Standard |
| Reserve estimates | 43,000 | 50,000 | 57,000 | 51,557 | 56,713 |

[112] *2018 NAIC Annual Statement Instructions Property/Casualty,* page 13.

Stated differently, Smith reasonably expects that the company's carried reserve could deviate by an amount equal to the materiality standard since the carried reserve plus the materiality standard lies within his range of reasonable unpaid claim estimates. The results of his quantitative analysis, coupled with his knowledge of the significant risks and uncertainties inherent in the company's reserves, lead Smith to conclude that there are significant risks and uncertainties that could result in material adverse deviation in the recorded reserves.

It is important to note that there is no requirement for an actuary to provide a range. Even when a range is provided, the actuary may believe there are significant risks and uncertainties that could result in material adverse deviation despite the results of the calculation described above. In other words, there may be qualitative reasons for concluding there are significant risks that could result in material adverse deviation absent quantitative reasons. For example, a company might have a significant portion of its gross loss and LAE reserves ceded to a reinsurer of relatively weak financial strength. In this case, the carried net reserve plus materiality standard might exceed the high end of the actuary's range (assuming all reinsurance was considered valid and collectible in determining the range). However, the risk that the company may not be able to recover a portion of its gross reserves due to the financial strength of one of its reinsurers may be considered significant by the actuary, and lead him/her to conclude the carried net reserves could deviate adversely by a material amount. Therefore, both qualitative and quantitative considerations should be considered in determining whether there are significant risks that could result in material adverse deviation.

REMAINING RELEVANT COMMENTS

The remaining relevant comments in Smith's opinion speak to the disclosure items in Exhibit B, addressing the fact that the company anticipates salvage and subrogation in its reserves totaling $1.363 million and discounts its reserves for certain workers' compensation and other liability claims on a tabular basis, the amount of which totals $1.365 million.

According to Smith, the company does not have claims-made extended reporting endorsement loss and expense reserves, participate in any underwriting pools or associations or write either P&C or A&H Long Duration Contracts.

As noted, retroactive and financial reinsurance is addressed in the relevant comments section. The liability for the one retroactive reinsurance assumed contract that the company has been deemed immaterial by Smith.

Finally, Smith has disclosed in his opinion that IRIS ratios 11, 12 and 13 did not produce unusual values for the company. We have confirmed this statement in our recalculation of Fictitious' IRIS ratios in Appendix I of this publication.

SIGNATURE OF THE APPOINTED ACTUARY

The SAO closes with an affirmative statement that an actuarial report supporting the SAO will be provided to the company and retained for a period of seven years at its administrative offices and will be made available for regulatory examination, if requested.

The SAO is signed and dated by the actuary for delivery along with the Annual Statement by March 1 of the year following the Annual Statement date (December 31). Note that some states require an original signature on each signed opinion, as opposed to a photocopy. The signature line includes the actuary's address (both postal and email).

Smith signed the opinion on February 24, 2019.

NOTEWORTHY CHANGES TO THE NAIC SAO INSTRUCTIONS IN 2019

While this text contemplates the NAIC SAO Instructions for 2018, there were significant changes to the NAIC SAO Instructions for 2019 pertaining to the requirements for an actuary to be qualified to sign property/casualty SAOs. In particular, the NAIC set the definition of a "Qualified Actuary" as "a person who:

(i) Meets the basic education, experience and continuing education requirements of Specific Qualifications Standard for Statements of Actuarial Opinion, NAIC Property and Casualty Annual Statement, as set forth in the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States (U.S. Qualification Standards), promulgated by the American Academy of Actuaries (Academy), and
(ii) has obtained and maintains an Accepted Actuarial Designation; and
(iii) is a member of a professional actuarial association that requires adherence to the same Code of Professional Conduct promulgated by the Academy, requires adherence to the U.S. Qualification Standards, and participates in the Actuarial Board for Counseling and Discipline when its members are practicing in the U.S.

An exception to parts (i) and (ii) of this definition would be an actuary evaluated by the Academy's Casualty Practice Council and determined to be a Qualified Actuary for particular lines of business and business activities."[113]

The NAIC has defined the term "Accepted Actuarial Designation as "an actuarial designation accepted as meeting or exceeding the NAIC's Minimum Property/Casualty (P/C) Actuarial Educational Standards for a P/C Appointed Actuary (published on the NAIC website). The following actuarial designations, with any noted conditions, are accepted as meeting or exceeding basic education minimum standards:

(i) Fellow of the CAS (FCAS) – Condition: basic education must include Exam 6 – Regulation and Financial Reporting (United States);

[113] *2019 NAIC Annual Statement Instructions Property/Casualty,* page 10.

(ii) Associate of the CAS (ACAS) – Conditions: basic education must include Exam 6 – Regulation and Financial Reporting (United States) and Exam 7 – Estimation of Policy Liabilities, Insurance Company Valuation, and Enterprise Risk Management;

(iii) Fellow of the SOA (FSA) – Conditions: basic education must include completion of the general insurance track, including the following optional exams: the United States' version of the Financial and Regulatory Environment Exam and the Advanced Topics in General Insurance Exam."[114]

The 2019 NAIC SAO Instructions include a table of allowable exam substitutions for (i), (ii) and (iii) in the definition of "Accepted Actuarial Designation" given that exams have changed over time.

In accordance with these changes, Exhibit B, Item 3 of the SAO (the Appointed Actuary's designation) has been modified to provide the Appointed Actuary's Accepted Actuarial Designation and the NAIC now requires the Appointed Actuary to provide qualification documentation to company's Board of Directors, including a description of how the Appointed Actuary meets the definition of Qualified Actuary and his or her experience relevant to the subject of the SAO.

We refer the reader to the 2019 NAIC SAO Instructions, AOWG Regulatory Guidance and COPLFR Practice Note for further details on these changes and new requirements for the Appointed Actuary.

[114] Ibid.

## CHAPTER 17. ACTUARIAL OPINION SUMMARY SUPPLEMENT

OVERVIEW

The Actuarial Opinion Summary Supplement (AOS) is required to be filed by the company with its domiciliary state by March 15 of the year following the Annual Statement date (December 31). This is a confidential document containing the appointed actuary's range of unpaid claim estimates and/or point estimate, as calculated by the actuary, in comparison to the company's recorded reserves on a net and gross of reinsurance basis. Due to its confidential nature, it is filed separately from the public Annual Statement document, which is due on March 1.

Non-domiciliary states that provide evidence of the ability to preserve the confidential nature of the document may request a copy.

The AOS also provides a statement regarding whether the company has experienced one-year adverse development in excess of 5% of surplus in three or more of the past five years. The amount of adverse development is computed in Schedule P, Part 2, Summary, and is also provided in the one-year development line of the Five-Year Historical Data exhibit within the Annual Statement. If the company has experienced adverse development in excess of 5% of surplus in three or more of the past five years, an explanatory paragraph is required so that the regulator can determine what additional review, if any, is required.

Prior to 2011, the actuary had the choice of providing his or her range, point estimate, or both, regardless of whether the actuary calculated both. In 2011, the instructions changed, requiring the actuary to include the point estimate and range, if both are calculated. If only one is calculated, the actuary would need only to provide one.

Because the AOS document is confidential, it is not available for public review, unlike the Statement of Actuarial Opinion (SAO). As a result, the student will not be able to find the AOS for the companies listed on the Casualty Actuarial Society *Syllabus of Basic Education*. However, we created an AOS for Fictitious Insurance Company, which is provided in Appendix I of this publication and should be read side by side with this chapter of the publication.

Like the SAO, the AOS is signed and dated by the actuary. In the case of Fictitious, this is Mr. William H. Smith. As we see in items A and B, Smith has produced a range and point estimate in his independent analysis of unpaid claims supporting the SAO. Items A and B include his range and point estimate on a net and gross of reinsurance basis, as displayed in Table 58.

TABLE 58

| | Net Reserves (USD in 000s) | | | Gross Reserves (USD in 000s) | | |
|---|---|---|---|---|---|---|
| | Low | Point | High | Low | Point | High |
| A. Actuary's range of reserve estimates | 43,000 | | 57,000 | 52,000 | | 68,000 |
| B. Actuary's point estimate | | 50,000 | | | 60,000 | |

Item C provides the company's carried loss and loss adjustment expense (LAE) reserves on which the actuary has based his opinion. Item D highlights the company's position within the actuary's range by showing the difference between the carried loss and LAE reserves and the actuary's range and point estimate. In Table 59 we see that Fictitious' recorded reserves lie above Smith's point estimate.

TABLE 59

| | Net Reserves (USD in 000s) | | | Gross Reserves (USD in 000s) | | |
|---|---|---|---|---|---|---|
| | Low | Point | High | Low | Point | High |
| C. Company carried reserves | | 51,557 | | | 61,699 | |
| D. Difference between Company carried and Actuary's estimate (C. - A. and C. – B., if applicable) | 8,557 | 1,557 | (5,443) | 9,699 | 1,699 | (6,301) |

It is not surprising that Fictitious' recorded reserves lie within the high end of the actuary's range given that the Fictitious' recorded loss and LAE reserves have developed favorably over time. This favorable development is seen in the one-year development line of the Five-Year Historical Data exhibit within Fictitious' 2018 Annual Statement. At the risk of being repetitious (see Table 13), we show the one-year development line again in Table 60.

TABLE 60

| Data from Fictitious Insurance Company 2018 Five-Year Historical Data | | | | | | |
|---|---|---|---|---|---|---|
| | | 2018 | 2017 | 2016 | 2015 | 2014 |
| 73. | Development in estimated losses and loss expenses incurred prior to current year (Schedule P, Part 2 — Summary, Line 12, Column 11); *USD in 000s* | (875) | (1,354) | (1,618) | (1,935) | (1,918) |
| 74. | Percent of development of losses and loss expenses incurred to policyholders' surplus of prior year end (Line 73 divided by Page 4, Line 21, Column 1 x 100) | (2.8) | (3.8) | (5.0) | (5.6) | (2.6) |

While the AOS only displays the company's current position within the actuary's range, the AOS Instructions require that the actuary state whether the company has experienced one-year adverse

development in excess of 5% of surplus in three or more of the past five years. This and an explanation are provided in Item E of the AOS. The information contained in Item E enables the regulator to obtain an understanding of why the company's recorded reserves continue to show adverse development over time. The concern, of course, is whether the company is consistently understating reserves and therefore overstating surplus. Depending on the result, the information provided in Item E could trigger additional regulatory review in assessing the company's financial health. As shown in Table 60, Fictitious' loss and LAE reserves have developed favorably in each of the past five years. As a result, Smith has responded with the following in Item E of his AOS:

> E. The Company has not had 1-year adverse development in excess of 5% of surplus in at least three of the last five calendar years, as measured by Schedule P, Part 2 Summary, and disclosed in the Five-Year Historical Data, on line 74, of the Company's December 31, 2018 statutory-basis Annual Statement.

In those cases where there has been adverse development in excess of 5% of surplus in three or more of the last five years, we have seen explanations in Item E vary from providing vague detail to very specific reasons for the changes. The more detail that can be provided as to the root cause, the easier time the regulator will have in his or her review.

To illustrate we have provided sample wording in the 2018 AOS of a fictional company that experienced one-year development in excess of 5% of surplus during 2015 through 2017:

> The company had one-year adverse development in excess of 5% of statutory surplus in three of the past five years. The exceptional values occurred in years 2015 through 2017. The exceptional values resulted from a strengthening in loss reserves made by management to reflect unexpected trends in asbestos and environmental claims on excess liability policies written by the company from 1968 to 1986.
>
> These trends include increased likelihood of exposure to higher-layer policies as a result of greater than expected emergence of reported claims on underlying policies, and efforts by insureds to expand coverage periods and expose additional policies.
>
> It should be noted that in 2018 the company entered into a retroactive reinsurance agreement whereby 100% of this run-off business is ceded to an unaffiliated reinsurance company. Going forward, this reinsurance agreement will mitigate the impact of adverse development of loss reserves on the company's statutory surplus.

The regulator reading the above will determine whether additional steps are necessary to understand the cause of the adverse development and impact on the company's financial health. While the regulator may gain comfort that the company's balance sheet is protected against future adverse development because of the new reinsurance agreement, we expect that the regulator would want to understand the potential impact of such development on the financial health of the company's unaffiliated reinsurer.

## CHAPTER 18. INSURANCE EXPENSE EXHIBIT

OVERVIEW

As discussed in Chapter 4. *Primary Financial Statements*, the Statement of Income within the Annual Statement provides a view of an insurance company's profitability over the past year on a net of reinsurance basis, but only on an aggregate level for all lines of business combined. The Insurance Expense Exhibit (IEE) enables a deeper review of an insurance company's profitability by showing the components of statutory profit (loss) by line of business on a direct and net of reinsurance basis.

The IEE is required to be filed by April 1 of the year following the Annual Statement date (December 31). It contains three parts plus interrogatories. Part I provides an allocation of the other underwriting expense category within Part 3, Expenses, of the Underwriting and Investment Exhibit (U&IE) of the Annual Statement. Parts II and III allocate pretax profit by line of business, on a net and direct written basis, respectively. All dollars are shown in thousands within the IEE, either by rounding or truncating.

The uses of the IEE are numerous. The following provides some examples:

- Regulators use the IEE as a means for monitoring financial health. Changes or historical trends in an insurance company's profitability at the line of business level may put a strain on the company's surplus in total, thereby threatening solvency.
- Regulators also use the IEE as a means to monitor rate adequacy. Inadequate rates also threaten an insurance company's financial health. Conversely, excessive rates are also a concern to the regulator as they are unfair to the consumer.
- Stakeholders in general use the IEE as a means to identify those lines of business that have performed profitably and those that have not in order to make informed business decisions, such as where to deploy capital and/or where the company should grow.
- An investor might look at the IEE in light of the company's future growth plans to make decisions as to how much to invest in the company. Growth into unprofitable lines might lead the investor to reduce his or her level of investment in the company.
- Actuaries use the IEE as a publicly available source of premium, loss and expense data for benchmarking company performance by line of business.

As we shall see, there are cautions to using the IEE as described above, and we have presented several within this chapter.

Throughout our discussion of the IEE, we will continue to use Fictitious Insurance Company in our examples.

PART I — ALLOCATION TO EXPENSE GROUPS

The National Association of Insurance Commissioners (NAIC) instructions to the Property/Casualty Annual Statement provide directions for classifying expenses to the 22 operating expense categories provided in Part 3, Expenses, of the U&IE within the Annual Statement. The instructions provide uniformity in classification of expenses among property/casualty insurance companies.

The 22 operating expense categories are as follows, by line number per the U&IE, Part 3, Expenses:

1. Claims adjustment services
2. Commission and brokerage
3. Allowances to managers and agents
4. Advertising
5. Boards, bureaus and associations
6. Surveys and underwriting reports
7. Audit of assureds' records
8. Salary and related items
9. Employee relations and welfare
10. Insurance
11. Directors' fees
12. Travel and travel items
13. Rent and rent items
14. Equipment
15. Cost or depreciation of Electronic Data Processing (EDP) equipment and software
16. Printing and stationery
17. Postage, telephone and telegraph, exchange and expenses
18. Legal and auditing
20. Taxes, licenses and fees
21. Real estate expenses
22. Real estate taxes
24. Miscellaneous

Amounts for the above operating expenses are each allocated into the following three categories (column headings) within the U&IE:

1. Loss Adjustment Expenses
2. Other Underwriting Expenses
3. Investment Expenses

Part 1 of the IEE further allocates other underwriting expenses into the following three components (column headings):

1. Acquisition, Field Supervision and Collection Expenses
2. General Expenses

3. Taxes, Licenses and Fees

The allocation of other underwriting expenses from the U&IE, Part 3, Expenses, into Part I of the IEE is as follows:

- All commission and brokerage expenses from line 2 of U&IE, Part 3 should be allocated to acquisition, field supervision and collection expenses in column 2 of Part I of the IEE.
- All taxes, licenses and fees from line 20 of U&IE, Part 3 should be allocated to taxes, licenses and fees in column 4 of Part I of the IEE.
- The remaining operating expenses from lines 3 through 18 of the IEE can be allocated to acquisition, field supervision and collection expenses in column 2 or general expenses in column 3 of Part I of the IEE, as applicable.

Part 1 of the IEE looks like Part 3, Expenses, of the U&IE within the Annual Statement, except:

1. There are three columns under the other underwriting expenses heading, rather than one in total.
2. The operating expense classification line items end with line 25, total expenses incurred, and therefore do not include amounts unpaid, amounts relating to uninsured plans or total expenses paid (lines 26 through 30 of U&IE, Part 3).
3. Amounts are reported in thousands of dollars in the IEE rather than in whole dollars as in the U&IE.

The totals in column 4 of the U&IE, Part 3, line 25 should equal the totals in column 6 of Part I of the IEE multiplied by 1,000.

Table 61 provides the other underwriting expenses column from Part3, Expenses, of the U&IE from Fictitious' 2018 Annual Statement, with the allocation to acquisition, field supervision and collection expenses, general expenses, and taxes licenses and fees, as in Part I of the company's 2018 IEE.

TABLE 61

| | Annual Statement | Insurance Expense Exhibit | | |
|---|---|---|---|---|
| | Underwriting and Investment Exhibit | Other Underwriting Expenses (USD in 000s) | | |
| | Part 3 - Expenses | Part 1 - Allocation to Expense Groups | | |
| | Column 2 | Column 2 | Column 3 | Column 4 |
| **Operating Expense Classifications** | **Other Underwriting Expenses** | **Acquisition, Field Supervision and Collection Expenses** | **General Expenses** | **Taxes, Licenses and Fees** |
| 2. Commission and brokerage | | | | |
| 2.1 Direct excluding contingent | 4,759,000 | 4,759 | | |
| 2.2 Reinsurance assumed, excluding contingent | – | – | | |
| 2.3 Reinsurance ceded, excluding contingent | 816,000 | 816 | | |
| 2.4 Contingent - direct | 121,000 | 121 | | |
| 2.5 Contingent - reinsurance assumed | – | – | | |
| 2.6 Contingent - reinsurance ceded | 9,000 | 9 | | |
| 2.7 Policy and membership fees | – | – | | |
| 2.8 Net commission and brokerage (2.1 + 2.2 - 2.3 + 2.4 + 2.5 - 2.6 + 2.7) | 4,055,000 | 4,055 | – | – |
| 3. Allowances to manager and agents | 4,000 | 1 | 3 | |
| 4. Advertising | 208,000 | 75 | 133 | |
| 5. Boards, bureaus and associations | 106,000 | 38 | 68 | |
| 6. Surveys and underwriting reports | 99,000 | 36 | 63 | |
| 7. Audit of assureds' records | – | – | – | |
| 8. Salary and related items: | | – | – | |
| 8.1 Salaries | 1,845,000 | 664 | 1,181 | |
| 8.2 Payroll taxes | 115,000 | 41 | 74 | |
| 9. Employee relations and welfare | 293,000 | 105 | 188 | |
| 10. Insurance | 23,000 | 8 | 15 | |
| 11. Directors' fees | – | – | – | |
| 12. Travel and travel items | 95,000 | 34 | 61 | |
| 13. Rent and rent items | 133,000 | 48 | 85 | |
| 14. Equipment | 42,000 | 15 | 27 | |
| 15. Cost or depreciation of EDP equipment and software | 330,000 | 119 | 211 | |
| 16. Printing and stationery | 19,000 | 7 | 12 | |
| 17. Postage, telephone and telegraph, exchange and express | 112,000 | 40 | 72 | |
| 18. Legal and auditing | 14,000 | 5 | 9 | |
| 19. Totals (Lines 3 to 18) | 3,438,000 | 1,236 | 2,202 | – |
| 20. Taxes, licenses and fees: | | | | |
| 20.1 State and local insurance taxes deducting guaranty association credits of $1,103 | 791,000 | | | 791 |
| 20.2 Insurance department licenses and fees | 53,000 | | | 53 |
| 20.3 Gross guaranty association assessments | (2,000) | | | (2) |
| 20.4 All other (excluding federal and foreign income and real estate) | 18,000 | | | 18 |
| 20.5 Total taxes, licenses and fees (20.1 + 20.2 + 20.3 + 20.4) | 860,000 | – | – | 860 |
| 21. Real estate expenses | – | | | |
| 22. Real estate taxes | – | | | |
| 23. Reimbursements by uninsured plans | – | | | |
| 24. Aggregate write-ins for miscellaneous expenses | 130,000 | 47 | 83 | |
| 25. Total expenses incurred | 8,483,000 | 5,338 | 2,285 | 860 |

PART II — ALLOCATION TO LINES OF BUSINESS NET OF REINSURANCE

Part II provides the components of total profit (loss) on a pretax basis, net of reinsurance, and additional information needed to calculate net profit (loss) for the line of business segments used in the U&IE of the Annual Statement. The line of business segments differ slightly from the U&IE in the following ways:

- Allied lines are broken down into further components in the IEE as:

  2.1 Allied lines

  2.2 Multiple peril crop

  2.3 Federal flood
- Commercial multiple peril is broken down into further components in the IEE as:

  5.1 Commercial multiple peril (non-liability portion)

  5.2 Commercial multiple peril (liability portion)
- Medical professional liability occurrence and claims-made lines are combined in the IEE into line 11, as are the corresponding product liability lines into line 18.
- Auto physical damage is broken down into further segments in the IEE as:

  21.1 Private passenger auto physical damage

  21.2 Commercial auto physical damage
- Reinsurance lines 31 through 33 are summed in the IEE.

Line 35 of the IEE provides the totals for all lines of business in lines 1 through 34.

Similar to the U&IE, the line of business segments are displayed in the first column of the IEE, with the components of profit (loss) and additional items in the remaining columns, providing the amounts (or percentages) for each line of business. These components and additional items are as follows:

- Net premiums written
- Net premiums earned
- Dividends to policyholders
- Incurred:
  - Loss
  - Defense and cost containment (DCC)
  - Adjusting and other (A&O) expenses
- Unpaid:
  - Loss
  - DCC
  - A&O expenses
- Unearned premium reserves
- Agents' balances

- Other underwriting expenses:
  - Commission and brokerage expenses incurred
  - Taxes, licenses and fees incurred
  - Other acquisitions, field supervision and collection expenses incurred
  - General expenses incurred
- Other income less other expenses
- Pre-tax profit or loss excluding all investment gain
- Investment gain on funds attributable to insurance transactions
- Profit or loss excluding investment gain attributable to capital and surplus
- Investment gain attributable to capital and surplus

The above items are organized in two columns: the first containing the dollar amount and the second providing the ratio of the dollar amount to premiums earned. There are 42 columns: 21 provide dollar amounts (odd-numbered columns) and 21 provide percentages to earned premium (even-numbered columns).

Total profit (loss) is calculated using the same components as in the Statement of Income, with the exception that the IEE is on a pretax basis. *Most* of the aforementioned components used to compute pretax profit (loss) either reconcile directly to exhibits within the Annual Statement, or are reasonably straightforward for companies to compute.[115] However, the calculation of investment gain is not straightforward, as the allocation of investment gain by line of business is not intuitive.

We will discuss the computation of each component (odd-numbered columns), reconciling to Annual Statement exhibits, and provide example(s) as to how to calculate investment gain. We will not address the even-numbered columns, other than to say that they represent the ratio of the dollar amount to net earned premium, on a line-by-line basis.

There are numerous ways to estimate profit by line of business; the approach used by the NAIC for the IEE is only one of them. The NAIC approach is a retrospective one. It allocates total profit that has emerged rather than providing an estimate of future profit, as is used in pricing insurance policies.

Further, the allocation of surplus by line of business does not consider how much surplus is needed to support the line, as is the intention in pricing insurance policies and capital modeling. Rather, as we shall see, the entire amount of surplus is allocated by line based on the level of the company's reserves (loss and unearned premium) and earned premium, which do not necessarily measure the inherent risk of a particular line of business. Good examples are catastrophe-exposed short-tailed lines, such as

[115] According to page 419 of the *2018 NAIC Annual Statement Instructions Property/Casualty*, "In instances where the reporting entity cannot allocate amounts to lines of business by direct and accurate allocation, the methods of allocation stated in the Uniform Classification of Expenses found in the Appendix of the *NAIC Annual Statement Instructions* must be used. Where the instructions do not define means of allocation, a reasonable method of allocation must be applied and disclosed in Interrogatory 4."

homeowners. In non-catastrophe years, the reserves for these lines may be relatively small because claims are reported and paid out relatively quickly when compared to longer-tailed casualty lines. However, as the property/casualty insurance industry observed in 2018, this short-tailed line of business is exposed to considerable risk. We shall see this in our examples for Fictitious. Therefore, caution should be made when reviewing and placing reliance on the results of the IEE calculations of surplus and profit by line of business for pricing or capital allocation purposes.

*Columns 1 through 32*

The following components or items within Part II reconcile directly to the U&IE within the Annual Statement by line of business as follows:

TABLE 62

| IEE Part II | | Reconciles to | U&IE | | |
|---|---|---|---|---|---|
| **Column Number** | **Heading** | | **Part** | **Heading** | **Column Number** |
| 1 | Premiums Written | --------> | 1B | Net Premiums Written | 6 |
| 3 | Premiums Earned | --------> | 1 | Premiums Earned During Year | 4 |
| 7 | Incurred Loss | --------> | 2 | Losses Incurred Current Year | 7 |
| 13 | Unpaid Losses | --------> | 2A | Net Losses Unpaid | 8 |
| 19 | Unearned Premium Reserves | --------> | 1A | Total Reserve for Unearned premiums | 5 |

Dividends to policyholders in column 5 reconcile in total to the amount in the Statement of Income of the Annual Statement, line 17. The allocation by line of business is based on the policies eligible and receiving dividends or on a company's formulaic determination if the line of business per the policy does not correspond directly to a line of business in the Annual Statement.[116]

Loss adjustment expense (LAE), provided separately for DCC and A&O expenses incurred and unpaid, in columns 9, 11, 15 and 17 of the IEE, cannot be found within the Annual Statement for the line of business breakdowns required in the IEE. However, insurance companies track expenses by line of business and therefore know which expenses are allocated to which lines. In total, the LAE incurred amounts in columns 9 plus 11 reconcile to the Statement of Income, line 3, column 1 (current year) and Part 3 of the U&IE, line 25, column 1. The LAE unpaid amounts reconcile to page 3 of the Annual Statement, line 3, column 1 (current year) and Part 2A of the U&IE, line 35, column 9.

Like policyholder dividends, insurance companies know which lines agents' balances stem from and therefore can allocate the amounts directly in column 21. The amounts should agree to balances included within lines 15.1 plus 15.2, column 3 of the Assets page of the Annual Statement.

[116] Feldblum, S., "The Insurance Expense Exhibit and the Allocation of Investment Income" (Fifth Edition), CAS Study Note, May 1997, page 32.

Other underwriting expenses in columns 23, 25, 27 and 29 reconcile directly to Part I of the IEE.

Other income less other expenses in column 31 of the IEE reconciles in total to line 15 minus line 5 of the Statement of Income. Line 15 of the Statement of Income provides total other income incurred, and line 5 provides aggregate write-ins for underwriting deductions. The allocation by line is performed directly by accumulating the sources of other income and underwriting deductions on specific policies and mapping the income/deductions by policy to the Annual Statement lines of business.

*Calculation of Pretax Profit or Loss Excluding All Investment Gain (Column 33)*

Column 33 provides pretax profit (loss) excluding all investment gains and is calculated from the information contained in the previous columns of Part II of the IEE as follows:

Pretax profit (loss) excluding all investment gains =

Premiums earned (column 3)
- Dividends to policyholders (column 5)
- Incurred loss (column 7)
- DCC expenses incurred (column 9)
- A&O expenses incurred (column 11)
- Commission and brokerage expenses incurred (column 23)
- Taxes, licenses and fees incurred (column 25)
- Other acquisitions, field supervision and collection expenses incurred (column 27)
- General expenses incurred (column 29)
+ Other income less other expenses (column 31).

Simply put, pretax profit equals inflows of earned revenue minus outflows of incurred expenses.

The total amount in column 33 reconciles to line 18 (net income after dividends to policyholders, after capital gains tax and before all other federal and foreign income taxes) *minus* line 11 (net investment gain (loss)) of the Statement of Income.

Table 63 demonstrates the calculation of column 33 of Part II of the IEE *in total* and shows the reconciliation to the Statement of Income within the Annual Statement for Fictitious in 2018. Recall that figures in the IEE are provided in thousands; any differences from the Statement of Income are due to rounding errors.

TABLE 63

| Data from Fictitious Insurance Company 2018 IEE (USD in 000s) for All Lines of Business | | | |
|---|---|---|---|
| **Column Number** | **IEE Part II Column Heading** | **Total Line 35** | **Statement of Income Reference** |
| 3 | Premiums Earned | 26,512 | Line 1 |
| 5 | Dividends to Policyholders | 46 | Line 17 |
| 7 | Incurred Loss | 16,907 | Line 2 |
| 9 | Defense and Cost Containment Expenses Incurred | 1,671 | |

| | | | |
|---|---|---|---|
| 11 | Adjusting and Other Expenses Incurred | 1,585 | |
| | Subtotal Loss Adjustment Expenses Incurred | 3,256 | Line 3 |
| 23 | Commissions and Brokerage Expenses Incurred | 4,055 | |
| 25 | Taxes, Licenses and Fees Incurred | 860 | |
| 27 | Other Acquisitions, Field Supervision and Collection Expenses Incurred | 1,283 | |
| 29 | General Expenses Incurred | 2,285 | |
| | Subtotal Other Underwriting Expenses Incurred | 8,483 | Line 4 |
| 31 | Other Income Less Other Expenses | 33 | Line 15 minus Line 5 |
| 33 | Pre-Tax Profit or Loss Excluding All Investment Gain | (2,147) | = Line 1 - Lines 17, 2, 3, 4 + Line 15 |

As displayed in Table 63, Fictitious operated at a pretax loss (before any gains or losses from investments) of $2.1 million in 2018, most of which was due to underwriting (underwriting loss totaled $2.1 million as per line 8 of the Statement of Income). Net incurred loss and LAE during 2018 was $4.4 million higher than that incurred in 2017, with less than $1 million more in net earned premium. As previously explained, this was due to the high frequency of catastrophe losses incurred by Fictitious in 2018, compared to a relatively benign catastrophe year for Fictitious in 2017.

Of the $2.1 million pretax loss (before investment gain), $1.2 million stems from the homeowners of business. Homeowners is the largest line of business written by the company in terms of net written premium volume ($4.6 million per column 1 of the IEE, Part II). Further, the homeowners line was hit hardest by the catastrophe losses in 2018. Given its significance to the 2018 results, we will use homeowners as the line of business example for computing total profit or loss for Fictitious.

The remaining columns, columns 35 through 41, are determined formulaically and are the crux of Part II of the IEE.

*Overview of the Calculation of Total Profit or Loss (Column 41)*

Column 41 provides total profit (loss) on a pretax basis to an insurance company for each line of business. It is computed by taking pretax profit (loss) *before* any investment gain and adding investment gains.

Column 41 of the IEE is equal to net income as calculated in the Statement of Income within the Annual Statement, except all amounts in the IEE are gross of taxes. Column 41 reconciles to line 18 (net income after dividends to policyholders, after capital gains tax and before all other federal and foreign income taxes) *plus* the amount of capital gains tax provided in line 10 (Net realized capital gains (losses) less capital gains tax) of the Statement of Income. Capital gains taxes are added back to the calculation simply because total profit is shown on a pretax basis.

Table 64 demonstrates the calculation of column 41 of Part II of the IEE *in total* and shows the reconciliation to the Statement of Income within the Annual Statement for Fictitious in 2018.

TABLE 64

**Data from Fictitious Insurance Company 2018 IEE (USD in 000s) for All Lines of Business**

| Column Number | IEE Part II Column Heading | Total Line 35 | Statement of Income Reference |
|---|---|---|---|
| 33 | Pre-tax Profit or Loss Excluding All Investment Gain | (2,147) | = Line 1 - Lines 17, 2, 3, 4 + Line 15 |
| 35 | Investment Gain on Funds Attributable to Insurance Transactions | 2,663 | |
| 39 | Investment Gain Attributable to Capital and Surplus | 1,741 | |
| | Subtotal Net Investment Gain (Loss) *Before* Capital Gains Tax | 4,404 | Line 11 + Capital Gains Tax of $99 per Line 10 |
| 41 | Total Profit or Loss | 2,257 | Line 18 + Capital Gains Tax of $99 per Line 10 |

As displayed in Table 64, net investment gain (loss) ($4.4 million) more than offset the Fictitious' underwriting loss in 2018.

The same formula is used to calculate total profit or loss (column 41) for each line of business. The tricky part, of course, is how to allocate the net investment gain (loss) by line of business and between funds attributable to insurance transactions versus those attributable to capital and surplus. The following provides an overview of the allocation procedure, with details in the subsequent sections.

The first step of the calculation is to determine the ratio of net investment gain (loss) to total investable assets then apply that ratio to investable assets by line of business. This calculation provides net investment gain (loss) by line. The ratio of net investment gain (loss) to total investable assets is called the net investment gain ratio.

The second step is to apply the net investment gain ratio to funds attributable to insurance transactions by line of business. This calculation provides investment gain on funds attributable to insurance transactions in column 35.

Investment gain attributable to capital and surplus in column 39 is computed as the difference between net investment gain (loss) and investment gain on funds attributable to insurance transactions in column 35. Formulaically, for each line of business,

Investment gain attributable to capital and surplus (column 39) =

Net investment gain (loss)[117]
- Investment gain on funds attributable to insurance transactions (column 35).

As indicated, both of the inputs in the calculation of investment gain attributable to capital and surplus (column 39) are determined by applying the ratio of net investment gain (loss) to total investable assets for all lines of business to the applicable investable funds (either in total or attributable to insurance transactions) associated with the particular line of business.

*Net Investment Gain Ratio*

[117] The calculation of net investment gain (loss) is provided in subsequent paragraphs below.

The net investment gain ratio is the ratio of net investment gain (loss) to total investable assets. Total investable assets equal the sum of net loss and LAE reserves, net unearned premium reserves, ceded reinsurance payable and policyholders' surplus, minus agents' balances. These amounts are intended to be a proxy for investable assets as they are amounts that are available for investment by the insurance company.[118] Agents' balances are subtracted in the formula because they are not investable assets.

In the calculation of total investable assets, the mean of the aforementioned amounts are used (i.e., average of the prior year and current year) because investment income during the year is earned on reserves and surplus throughout the year, rather than a fixed point in time.

Formulaically, the net investment gain ratio is calculated as follows, for all lines of business in total:

Net investment gain ratio =

$$\frac{\text{Net investment gain (loss)}}{\text{Total investable assets}}$$

where,

Total investable assets =

Mean net loss and LAE reserves
+ Mean net unearned premium reserves
+ Mean ceded reinsurance premiums payable
+ Mean policyholders' surplus
- Mean agents' balances.

Table 65 demonstrates the calculation of the net investment gain ratio based on 2018 Annual Statement data for Fictitious.

TABLE 65

**Data from Fictitious Insurance Company 2018 IEE and Annual Statement (USD in 000s)**

| All Lines of Business | 2018 Current Year | 2017 Prior Year | Mean | 2018 IEE Part II Total, Line 35 | Annual Statement |
|---|---|---|---|---|---|
| (1) **Net Investment Gain Ratio** | **5.0%** | | | | = (2) current year divided by (3) mean |
| (2) **Net Investment Gain (loss) *before* Capital Gains Tax** | **4,404** | | | | Statement of Income Page 4, Line 11 plus Capital Gains Tax of $99 per Line 10 |

[118] Going back to basics, admitted assets minus liabilities equals surplus. Or equivalently, admitted assets equals liabilities plus surplus. Reserves and ceded reinsurance payables are liabilities that the insurance carrier must hold. As with surplus, the company can invest the assets backing these liabilities. They are therefore used in the calculation to represent investable assets.

| | | | | | | |
|---|---|---|---|---|---|---|
| (3) | **Investable Assets** | 87,540 | 87,080 | **87,310** | | = (4) + (5) + (6) + (7) + (8) - (9) |
| (4) | **Net Loss Reserve** | 41,894 | 40,933 | 41,414 | Column (13) | U&IE, Part 2A, Total line, Column 8, divided by 1,000 |
| (5) | **Net Loss Adjustment Expense Reserve** | 9,663 | 9,664 | 9,664 | Column (15) + (17) | U&IE, Part 2A, Total line, Column 9, divided by 1,000 |
| (6) | **Net Unearned Premium Reserve** | 11,691 | 11,451 | 11,571 | Column (19) | U&IE, Part 1A, Total line 35, Column 4, divided by 1,000 |
| (7) | **Policyholders' Surplus** | 31,024 | 31,608 | 31,316 | | Liabilities, Surplus and Other Funds, Page 3, Line 37, divided by 1,000 |
| (8) | **Ceded Reinsurance Premiums Payable** | 440 | 608 | 524 | | Liabilities, Surplus and Other Funds, Page 3, Line 12, divided by 1,000 |
| (9) | **Agents' Balances** | 7,172 | 7,184 | 7,178 | Column (21) | Equals the portion of Assets Line 15.1 plus 15.2, divided by 1,000, for Agents' Balances |

As displayed above, the 2018 investment gain ratio for Fictitious was 5%. This means the company earned 5% on its "investable assets" during 2018.

*Net Investment Gain (Loss) by Line of Business*

Net investment gain (loss) by line of business is determined as the investment gain ratio multiplied by total investable assets for that line of business.

Net investment gain (loss) for a particular line of business =

Net investment gain ratio (for all lines)
* Total investable assets for the line of business

where,

Total investable assets for the line of business =

Mean net loss and LAE reserves for the line of business
+ Mean net unearned premium reserves for the line of business
+ Mean ceded reinsurance premiums payable for the line of business
+ Mean policyholders' surplus for the line of business
- Mean agents' balances for the line of business.

Table 66 demonstrates the calculation of the net investment gain for the homeowners line of business based on 2018 Annual Statement and IEE data for Fictitious.

TABLE 66

**Data from Fictitious Insurance Company 2018 IEE and Annual Statement (USD in 000s)**

| | Line of Business: Homeowners Multiple Peril | 2018 Current Year | 2017 Prior Year | Mean | 2018 IEE Part II Total, Line 35 | Annual Statement (AS) |
|---|---|---|---|---|---|---|
| (1) | Investment Gain for Line of Business | 232 | | | Column (35) | = (3) Current Year * (3) Mean |
| (2) | Net Investment Gain Ratio (all lines of business) | **5.0%** | | | | Calculated in Table 65 |
| (3) | Investable Funds for Line of Business | | | 4,603 | | = (4) + (5) + (6) + (7) - (8) + (9) |
| (4) | Net Loss Reserve for Line of Business | 1,311 | 1,161 | **1,236** | Column (13) | U&IE, Part 2, Line 4, Columns 5 and 6, divided by 1,000 |
| (5) | Net Loss Adjustment Expense Reserve for Line of Business | 144 | 170 | **157** | Column (15) + (17) | U&IE, Part 2A, Line 4, Column 9, divided by 1,000; and prior year AS |
| (6) | Net Unearned Premium Reserve for Line of Business | 2,401 | 2,290 | **2,346** | Column (19) | U&IE, Part 1A, Line 4, Column 5, divided by 1,000; and prior year AS |
| (7) | Ceded Reinsurance Premiums Payable for Line of Business | 21 | 3 | **12** | | Calculated in Table 67 |
| (8) | Agents' Balances for Line of Business | 1,901 | 2,134 | **2,018** | Column (21) | IEE, Column 21, line 4 provided in each of the 2018 and 2017 AS |
| (9) | Surplus Allocable to Line of Business | | | **2,869** | | Calculated in Table 69 |

As displayed in Table 66, $232,000 of the company's total $4.4 million in net investment gain during 2018 was allocated to the homeowners line using the NAIC's approach.

The net loss and LAE reserves, unearned premium reserves and agents' balances by line of business used in the above calculation come from columns 13, 15, 17, 19 and 21 of the IEE, current year and prior year,

respectively. Ceded reinsurance premiums payable by line and policyholders' surplus by line, are calculated separately.

*Ceded Reinsurance Premiums Payable by Line of Business*

Ceded reinsurance premiums payable are allocated to line of business based on the distribution of ceded written premiums by line. Formulaically, the calculation is as follows:

Ceded reinsurance premiums payable for the line of business =

$$\frac{\text{Ceded written premiums for the line of business}}{\text{Total ceded written premiums}} * \text{Total ceded reinsurance premiums payable.}$$

Table 67 demonstrates the calculation of Fictitious' ceded reinsurance premiums payable for homeowners.

TABLE 67

**Data from Fictitious Insurance Company 2017 and 2018 Annual Statement (USD in 000s)**

| Line of Business: Homeowners Multiple Peril | | 2018 Current Year | 2017 Prior Year | Mean | 2018 IEE Part II Total, Line 35 | Annual Statement (AS) |
|---|---|---|---|---|---|---|
| (1) | Ceded Reinsurance Premiums Payable for Line of Business | 21 | 3 | 12 | N/A | = (4) * (5) |
| (2) | Ceded Premiums Written for Line of Business | 91 | 12 | | N/A | U&IE, Part 1B, Line 4, Columns 4 + 5, divided by 1,000; and prior year AS |
| (3) | Ceded Premiums Written, Total | 1,882 | 2,149 | | N/A | U&IE, Part 1B, Totals, Columns 4 + 5, divided by 1,000; and prior year AS |
| (4) | Ratio of Ceded Premiums Written for Line of Business to Total | 4.8% | 0.6% | | N/A | = (2) / (3) |
| (5) | Ceded Reinsurance Premiums Payable, Total | 440 | 608 | | N/A | Liabilities, Surplus and Other Funds, Page 3, Line 12, divided by 1,000 |

The mean ceded reinsurance payable for homeowners that was used in the calculation of Fictitious' total investable assets for homeowners was $12 (dollars in thousands).

*Policyholders' Surplus by Line of Business*

The NAIC allocates surplus to line of business in proportion to the sum of net loss and LAE reserves, net unearned premium reserves and net earned premium. The mean values are used in the calculation of the balance sheet figures (reserves), while the current-year value is used for the income statement figure (net earned premium).

The first step in the calculation is to compute the ratio of mean policyholders' surplus to the sum of mean net loss and LAE reserves, mean net unearned premium reserves and current year net earned premiums, in total for all lines combined. This ratio is called the *surplus ratio*.

Surplus ratio =

Mean policyholders' surplus in total *divided by*
[Mean net loss and LAE reserves in total
+ Mean net unearned premium reserves in total
+ Current year net earned premium in total].

Table 68 demonstrates the calculation of the 2018 surplus ratio for Fictitious.

TABLE 68

**Data from Fictitious Insurance Company 2018 IEE and 2017 and 2018 Annual Statement (USD in 000s)**

| All Lines of Business | | 2018 Current Year | 2017 Prior Year | Mean | 2018 IEE Part II Total, Line 35 | Annual Statement (AS) |
|---|---|---|---|---|---|---|
| (1) | Surplus Ratio | 35.1% | | | | = (2) / [Sum of means of (3) through (5) plus (6) for current year] |
| (2) | Policyholders' Surplus | 31,024 | 31,608 | 31,316 | | Liabilities, Surplus and Other Funds, Page 3, Line 37, Columns 1 and 2, respectively, divided by 1,000 |
| (3) | Net Loss Reserve | 41,894 | 40,933 | 41,414 | Column (13) | U&IE, Part 2A, Total line, Column 8, divided by 1,000; and prior year AS |
| (4) | Net Loss Adjustment Expense Reserve | 9,663 | 9,664 | 9,664 | Column (15) + (17) | U&IE, Part 2A, Total line, Column 9, divided by 1,000; and prior year AS |
| (5) | Net Unearned Premium Reserve | 11,691 | 11,451 | 11,571 | Column (19) | U&IE, Part 1A, Total line 35, Column 4, divided by 1,000; and prior year AS |
| (6) | Net Earned Premium | 26,512 | | | Column (3) | U&IE, Part 1, Total line 35, Column 4, divided by 1,000 |

The surplus ratio for Fictitious was 35.1% in 2018.

The surplus ratio is then applied to the applicable mean balance sheet amounts and the income statement amount (earned premium) for the current year for the particular line of business to determine the amount of surplus allocated to that line.

Surplus allocated to line of business =

Mean surplus ratio (for all lines) *multiplied by*
[Mean net loss and LAE reserves for the line of business
+ Mean net unearned premium reserves for the line of business

+ Current year net earned premium for the line of business].

Table 69 shows the application of the surplus ratio in determining the amount of surplus allocated to Fictitious' homeowners line of business.

TABLE 69

**Data from Fictitious Insurance Company 2018 IEE and 2017 and 2018 Annual Statement (USD in 000s)**

| Line of Business: Homeowners Multiple Peril | | 2018 Current Year | 2017 Prior Year | Mean | 2018 IEE Part II Total, Line 35 | Annual Statement (AS) |
|---|---|---|---|---|---|---|
| (1) | Surplus Allocable to Line of Business | | | 2,872 | | = (2) * [ Sum of means of (3) through (5) plus (6) for current year] |
| (2) | Surplus Ratio | 35.1% | | | | Calculated in Table 68 |
| (3) | Net Loss Reserve for Line of Business | 1,311 | 1,161 | 1,236 | | U&IE, Part 2, Line 4, Columns 5 and 6, divided by 1,000 |
| (4) | Net Loss Adjustment Expense Reserve for Line of Business | 144 | 170 | 157 | | U&IE, Part 2A, Line 4, Column 9, divided by 1,000; and prior year AS |
| (5) | Net Unearned Premium Reserve for Line of Business | 2,401 | 2,290 | 2,346 | | U&IE, Part 1A, Line 4, Column 5, divided by 1,000; and prior year AS |
| (6) | Net Earned Premium for Line of Business | 4,445 | | | Column (3) | U&IE, Part 1, Line 4, Column 4, divided by 1,000 |

As displayed in Table 69, $2.9 million of the Fictitious' total $31 million in policyholders' surplus at year-end 2018 was allocated to the homeowners line using the NAIC's allocation approach. Stated differently, less than 10% of the company's policyholders' surplus was allocated to homeowners using the IEE allocation. This exemplifies the caution noted earlier in relying on this method for prospective pricing or even retrospective evaluation of profitability. Given the catastrophe risk inherent in this line of business, which is quite evident based on 2018 experience, one might expect more than 10% of the surplus to be allocated to this line. To provide some perspective, in 2018 we saw that homeowners contributed more than 50% of the company's underwriting loss. If the IEE allocation is used in pricing for Fictitious, the rates will be inadequate and could eventually result in the insolvency of Fictitious.

*Investment Gain by Line of Business Attributable to Insurance Transactions*

Investment gain attributable to insurance transactions is allocated to line of business by applying the net investment gain ratio to funds attributable to insurance transactions for the particular line. Funds attributable to insurance transactions for a particular line are equal to the sum of mean net loss and LAE reserves, mean net unearned premium reserves and mean ceded reinsurance premiums payable for that line, reduced by agents' balances and the portion of prepaid expenses in the unearned premium reserves.

Funds attributable to insurance transactions for the line of business =

Mean net loss and LAE reserves for the line of business
+ Mean net unearned premium reserves for the line of business
+ Mean ceded reinsurance premiums payable for the line of business
- Mean agents' balances for the line of business
- Prepaid expenses in the unearned premium reserves.

The elements that go into the calculation of funds attributable to insurance transactions differ from total investable funds in two ways. First, mean policyholders' surplus is not included in the calculation of funds attributable to insurance transactions. This is because here the focus is on funds attributed to insurance transactions and not to capital and surplus. Second, prepaid expenses in the unearned premium reserves are not included in the calculation because they are not an investable asset; they have already been expensed. These expenses were not explicitly removed in the calculation of total investable funds because they are already out of policyholders' surplus, which is a component of the calculation.

Table 70 provides the calculation of investment gain attributable to insurance transactions for Fictitious' homeowners line.

TABLE 70

**Data from Fictitious Insurance Company 2018 IEE and 2017 and 2018 Annual Statement (USD in 000s)**

| | Line of Business: Homeowners Multiple Peril | 2018 Current Year | 2017 Prior Year | Mean | 2018 IEE Part II Total, Line 35 | Annual Statement (AS) |
|---|---|---|---|---|---|---|
| (1) | Investment Gain on Funds Attributable to Insurance Transactions for Line of Business | 53 | | | Column (35) | = (2) Current Year * (3) Mean |
| (2) | Net Investment Gain Ratio (all lines of business) | 5.0% | | | | Calculated in Table 65 |
| (3) | Funds Attributable to Insurance Transactions for Line of Business | 1,283 | 829 | 1,056 | | = (4) + (5) + (6) + (7) - (9) - [(6) * (8)] |
| (4) | Net Loss Reserve for Line of Business | 1,311 | 1,161 | 1,236 | Column (13) | U&IE, Part 2, Line 4, Columns 5 and 6, divided by 1,000 |
| (5) | Net Loss Adjustment Expense Reserve for Line of Business | 144 | 170 | 157 | Column (15) + (17) | U&IE, Part 2A, Line 4, Column 9, divided by 1,000; and prior year AS |
| (6) | Net Unearned Premium Reserve for Line of Business | 2,401 | 2,290 | 2,346 | Column (19) | U&IE, Part 1A, Line 4, Column 5, divided by 1,000; and prior year AS |
| (7) | Ceded Reinsurance Premiums Payable for Line of Business | 21 | 3 | 12 | | Calculated in Table 67 |
| (8) | Prepaid Expense Ratio | 29% | | | | Calculated in Table 71 |
| (9) | Agents' Balances for Line of Business | 1,901 | 2,134 | 2,018 | Column (21) | |

As displayed in Table 70, $53,000 of the company's total $232,000 in net investment gain on the homeowners line was attributed to gains on insurance transactions using the NAIC approach.

*Prepaid Expense Ratio*

The ratio that is used to determine the amount of unearned premium reserves representing prepaid expenses is calculated for each line of business separately. It is the ratio of net acquisition expenses to net written premiums (column 1). Net acquisition expenses are calculated as the sum of commissions and brokerage expenses incurred (column 23); taxes, licenses and fees incurred (column 25); other acquisition, field supervisions and collection expenses incurred (column 27); and half of the general expenses incurred (50% of column 29).

The prepaid expense ratio for homeowners is calculated for Fictitious in Table 71.

TABLE 71

**Data from Fictitious Insurance Company 2018 IEE and 2017 and 2018 Annual Statement (USD in 000s)**

| Line of Business: Homeowners Multiple Peril | | 2018 Current Year | 2017 Prior Year | Mean | 2018 IEE Part II Total, Line 4 | Annual Statement |
|---|---|---|---|---|---|---|
| (1) | Prepaid Expense Ratio | 29% | | | | = (2) / (7) |
| (2) | Net Acquisition Expenses for Line of Business | 1,315 | | | | = (3) + (4) + (5) + 50% of (6) |
| (3) | Commissions and Brokerage Expenses Incurred for Line of Business | 867 | | | Column (23) | |
| (4) | Taxes, Licenses and Fees Incurred for Line of Business | 130 | | | Column (25) | |
| (5) | Other Acquisitions, Field Supervision and Collection Expenses Incurred for Line of Business | 169 | | | Column (27) | |
| (6) | General Expenses Incurred for Lines of Business | 298 | | | Column (29) | |
| (7) | Net Written Premium for Line of Business | 4,555 | | | Column (1) | |

The prepaid expense ratio for Fictitious was 29% in 2018.

*Investment Gain by Line of Business Attributable to Capital and Surplus*

The difference between net investment gain (loss) and the amount of investment gain attributed to insurance transactions is the amount of investment gain attributable to capital and surplus. Table 72 provides this calculation for Fictitious.

TABLE 72

**Data from Fictitious Insurance Company 2018 IEE (USD in 000s)**

| Line of Business: Homeowners Multiple Peril | | 2018 Current Year | 2017 Prior Year | Mean | 2018 IEE Part II Total, Line 35 | Annual Statement |
|---|---|---|---|---|---|---|
| (1) | Investment Gain Attributable to Capital and Surplus for Line of Business | 179 | | | Column (39) | = (2) - (3) |
| (2) | Investment Gain for Line of Business | 232 | | | | Calculated in a Table 66 |
| (3) | Investment Gain on Funds Attributable to Insurance Transactions for Line of Business | 53 | | | Column (35) | Calculated in Table 70 |

As displayed in Table 72, the amount of investment gain attributable to capital and surplus for homeowners was $179,000.

**Total profit or loss**

Finally, column 41 provides total profit (loss) by line of business. Table 73 demonstrates the calculation of total profit in 2018 for Fictitious' homeowners line. First, we will provide the calculation of pretax profit excluding all investment gain for homeowners, as shown in column 33. Then we will add the components of net investment gain in columns 35 and 39 to compute total profit in column 41.

Pretax profit excluding all investment gain is first computed for Fictitious' homeowners line of business as follows in Table 73.

TABLE 73

**Data from Fictitious Insurance Company 2018 IEE (USD in 000s) for Homeowners Multiple Peril**

| Column Number | IEE Part II Column Heading | Total Line 4 | Notes |
|---|---|---|---|
| 3 | Premiums Earned | 4,445 | |
| 5 | Dividends to Policyholders | - | |
| 7 | Incurred Loss | 3,789 | |
| 9 | Defense and Cost Containment Expenses Incurred | 74 | |
| 11 | Adjusting and Other Expenses Incurred | 360 | |
| 23 | Commissions and Brokerage Expenses Incurred | 867 | |
| 25 | Taxes, Licenses and Fees Incurred | 130 | |
| 27 | Other Acquisitions, Field Supervision and Collection Expenses Incurred | 169 | |
| 29 | General Expenses Incurred | 298 | |
| 31 | Other Income Less Other Expenses | 1 | |
| 33 | Pre-Tax Profit of Loss Excluding All Investment Gain | (1,241) | = Column 3 minus Columns 5, 7, 9, 11, 23,25, 27, 29 plus Column 31 |

As displayed in Table 73, the NAIC allocation formula shows that Fictitious experienced a pretax loss of $1.2 million on its homeowners book in 2018, nearly all of which came from underwriting (since other income is $1).

The calculation of column 41 of Part II of the IEE shows that investment gains only offset $232,000 of the $1.2 million underwriting loss, such that homeowners showed an overall loss, after investment gain, of $1.0 million.

TABLE 74

| Data from Fictitious Insurance Company 2018 IEE (USD in 000s) for Homeowners Multiple Peril | | | |
|---|---|---|---|
| Column Number | IEE Part II Column Heading | Total Line 35 | Statement of Income Reference |
| 33 | Pre-Tax Profit or Loss Excluding All Investment Gain | (1,241) | |
| 35 | Investment Gain on Funds Attributable to Insurance Transactions | 53 | |
| 39 | Investment Gain Attributable to Capital and Surplus | 179 | |
| | Subtotal Net Investment Gain (loss) *before* Capital Gains Tax | 232 | |
| 41 | Total Profit or Loss | (1,009) | |
| 42 | % | 22.7% | = Column 41 divided by Column 3 |

Out of the total $2.3 million in pretax profit for all lines earned by Fictitious in 2018, $(1.0) million was allocated to homeowners based on the NAIC calculation. This represents -23% of net earned premium in 2018. A review of column 41 of IEE shows that Fictitious also experienced pretax losses in the other liability, automobile physical damage and fidelity lines. Profits were earned in other lines to absorb the losses in these lines of business, the largest of which was achieved in workers' compensation ($3.3 million). This is why companies diversify insurance risks across property/casualty lines of business; the intent is that any losses would be offset by gains.

PART III — ALLOCATION TO LINES OF BUSINESS DIRECT

Part III provides the components of direct profit (loss) on a pretax basis, excluding investment gain. Investment gain is not considered because investment income is earned on the actual assets held by the company, which are net of reinsurance.

Different from Part II, the components used to compute profit (loss) in Part III are not readily available from the Annual Statement as presented. Unless assigned with the task of completing the IEE for their employer, most students will not use the information contained in Part III of the IEE. This publication is not intended to be an instruction manual for completing the IEE. As a result, we will only provide a brief discussion of the computation of each component, reconciling to Annual Statement exhibits when possible.

*Columns 1 through 32*

As with Part II, the even columns of Part III of the IEE provide the percent of the corresponding amounts in the odd-numbered columns to earned premium, in this case on a direct basis.

Direct premiums written in column 1 reconcile to Part 1B, Premiums Written, column 1, of the U&IE. Direct premiums written also reconcile to column 1 of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line and in total to Schedule T, column 2, line 59.

Direct premiums earned in column 3 reconcile to column 2 of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line, for all states plus any alien business, and in total to Schedule T, column 3, line 59.

Dividends to policyholders in column 5 should agree to line 17 of the Statement of Income, excluding dividends associated with business assumed and ceded.

Incurred loss in column 7 reconciles to column 6 of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line, for all states plus any alien business, and in total to Schedule T, column 6, line 59.

DCC expenses incurred and unpaid in columns 9 and 15, respectively, reconcile to columns 9 and 10, of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line, for all states plus any alien business. Incurred expenses also reconcile in total to the U&IE, Part 3, Expenses, line 1.1 of column 1.

A&O expenses incurred and unpaid in columns 11 and 17, respectively, cannot be tied directly to amounts presented in the Annual Statement. The NAIC instructions state, "IEE Part III, columns 9, 11, 15 and 17 must agree with IEE Part II, columns 9, 11, 15 and 17, respectively, excluding expenses relating to reinsurance assumed and ceded."[119] An insurance company knows which expenses are allocated to which lines and can therefore complete these columns.

Unpaid losses in column 13 reconcile to column 7 of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line, for all states plus any alien business, and in total to Schedule T, column 7, line 59.

Unearned premium reserves in column 19 reconcile to column 4 of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line, for all states plus any alien business.

Agents' balances in column 21 stem from policies written; therefore, companies know the applicable line of business. The amounts should agree to balances included within lines 15.1 plus 15.2, column 3 of the Assets page, excluding balances relating to reinsurance.

Other underwriting expenses in columns 23, 25, 27 and 29 cannot be found in the line of business breakdown of Part III. However, they should reconcile in total to the corresponding amounts in Part I of the IEE excluding amounts relating to reinsurance assumed or ceded. In fact, commissions and brokerage incurred on a direct basis in column 23 should reconcile in total to the sum of the amounts in line 2.1 plus 2.4 of IEE Part I, column 2.

Other income less other expense in column 31 also does not reconcile directly to amounts in the Annual Statement. However, the NAIC instructions note that it should agree in total to amounts in line 15 minus line 5 of the Statement of Income that apply to direct business only (i.e., "excluding expenses related to reinsurance assumed or ceded").[120]

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[119] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 422.
[120] Ibid., page 422.

*Calculation of Pretax Profit or Loss Excluding All Investment Gain (Column 33)*

Column 33 provides pretax profit (loss) excluding all investment gains and is calculated from the information contained in the previous columns of Part III of the IEE, using the same formulaic approach as in Part II. Specifically,

Pretax profit or loss excluding all investment gains =

Premiums earned (column 3)
- Dividends to policyholders (column 5)
- Incurred loss (column 7)
- DCC expenses incurred (column 9)
- A&O expenses incurred (column 11)
- Commission and brokerage expenses incurred (column 23)
- Taxes, licenses and fees incurred (column 25)
- Other acquisitions, field supervision and collection expenses incurred (column 27)
- General expenses incurred (column 29)
+ Other income less other expenses (column 31).

INTERROGATORIES

The interrogatories to the IEE are actually shown before the Parts I through III. The interrogatories provide explanatory notes on the information contained in Parts I through III, the most important of which is Interrogatory 4, which provides information on the process by which the allocations of expenses and profit are made. Specifically, question 4 asks:

4. The information provided in the Insurance Expense Exhibit will be used by many persons to estimate the allocation of expenses and profit to the various lines of business.
   - 4.1 Are there any items requiring special comment or explanation?
   - 4.2 Are items allocated to line of business in Parts II and III using methods not defined in the instructions?
   - 4.3 If yes, explain.[121]

Questions 4.1 and 4.2 each require “yes” or “no” responses. If the company answers “yes” to either question, the company is required to provide an explanation, so the user can consider differences in the company’s process relative to what is stated in the instructions.

[121] 2018 IEE.

## CHAPTER 19. RISK-BASED CAPITAL

OVERVIEW

The Risk-Based Capital (RBC) system was developed by the National Association of Insurance Commissioners (NAIC) and has been used since 1994 to provide a means for the early detection of insurance company insolvency. It was implemented for property/casualty companies in part in response to reports issued by the federal government in the late 1980s and early 1990s questioning the ability of state governments to regulate insurance companies.[122] These reports emerged in the wake of four of the largest property/casualty insurance company insolvencies in the history of the U.S. insurance industry: Mission Insurance Company, Transit Casualty Company, Integrity Insurance Company and Anglo-American Insurance Company.

The implementation of the RBC system was a significant advancement in solvency monitoring by state governments and has also served as the foundation for many other capital models that followed, including those currently used by rating agencies.

There are two main components to the RBC system:

1. RBC formula: The RBC formula results in a minimum level of required capital determined (the authorized control level benchmark, or ACL) formulaically using an approach that is standard to all insurance companies in a particular industry group (e.g., property/casualty, life and health). The minimum level of required capital is intended to reflect the capital needed to support the risks faced by insurance companies. The company's actual recorded capital and surplus is compared to the minimum required capital to produce the RBC ratio.[123] The RBC ratio is compared to a range of values that define the levels of company and regulatory action.
2. RBC for Insurers Model Act:[124] The RBC Model Act, as adopted in the laws and regulations of each state, provides the state insurance regulator with authority to take specific action when a company's RBC ratio falls below certain thresholds.

The RBC system is applied to property/casualty, life and health insurance companies. Certain entities are exempt from the RBC system, including title insurance companies, monoline financial guaranty insurance companies and monoline mortgage guaranty insurance companies[125]. Other exemptions may apply based on individual state laws and regulations.

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[122] The most widely known of these reports was written by the U.S. House of Representatives Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce titled, "Failed Promises – Insurance Company Insolvencies" (see U.S. House of Representatives Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce. "Failed Promises-Insurance Company Insolvencies." 101 Cong., 2nd sess., February 1990. Washington, D.C.: GPO, 1993).

[123] The company's actual recorded capital and surplus is adjusted to reflect certain items that will be introduced later in this chapter.

[124] NAIC RBC for Insurers Model Act (Model #312).

[125] It should be noted that the NAIC is currently in the process of testing and implementing a proposed risk-based mortgage guaranty capital model, see: http://www.naic.org/cmte_e_mortgage_guaranty_insurance_wg.htm

This publication will focus on the RBC system as it applies to property/casualty insurance companies. The formulas differ for property/casualty, life and health insurance companies, reflecting differing risk factors for each.

Insurance companies are required to file their RBC report with the NAIC by March 1 based on information evaluated as of the prior year-end (December 31). An insurance company's RBC report provides its RBC formula calculations and management discussion and analysis of the RBC results. The RBC report is confidential; therefore, details of the calculation are not available to the public. However, the summarized results of the RBC formula calculations are shown in the Five-Year Historical Data exhibit of the Annual Statement, which is in the public domain. The disclosure shows the overall result of the authorized control level risk-based capital calculation together with the company's total adjusted capital, which can be compared to determine the RBC ratio.

RBC FORMULA

*Overview*

The RBC formula is computed by applying a set of factors to asset, reserve, recoverable and premium items reported in an insurance company's Annual Statement. The size of the factor depends on the level of risk associated with each item; the greater the risk, the greater the factor. The application of the factors to the associated Annual Statement items results in what are commonly referred to as "risk charges."

The formula is not a comprehensive measure of every risk for an insurance company; rather it only considers those risks that are material to an insurance company. Further, risks associated with a company's business plans and strategy, management, internal controls, systems, reserve adequacy and ability to access capital are not considered as these risks are difficult to quantify.

The general structure of the RBC formula has remained intact since it was first implemented in 1994, although the risk charges have been subject to periodic revisions since that time. In recent years, additional risk categories have been introduced to the formula to reflect evolving practices around the management and quantification of risk in the insurance industry. The RBC formula was developed based on its predecessor, the life RBC formula, which the NAIC implemented a year earlier in 1993.[126]

*Risk Categories*

The current property/casualty RBC formula includes eight risk categories, with most denoted by the letter "R" with an indicator subscript to identify the particular risk:

$R_0$ Subsidiary Insurance Companies and Miscellaneous Other Amounts
$R_1$ Asset Risk – Fixed Income
$R_2$ Asset Risk – Equity

[126] RBC for stand-alone health insurers was not implemented until 1998.

| | |
|---|---|
| $R_3$ | Asset Risk – Credit |
| $R_4$ | Underwriting Risk – Reserves |
| $R_5$ | Underwriting Risk – Net Written Premium |
| $R_{cat}$ | Catastrophe Risk |
| - | Operational Risk[127] |

Broadly speaking, the major categories of risk captured by the property/casualty RBC formula are similar to those within the life and health formulas, focusing mainly on the risks associated with the company's investments and other recoverable-based assets ("asset risk"), as well as risks associated with the issuance of insurance policies ("underwriting risk"). Visually, the formulas differ by the use of the letter "R" denoting the risks for property-casualty, while the letter "C" is used for the life formula and "H" for the health formula.

Asset risk is a much smaller portion of the property/casualty total risk charge compared to the life industry. This is because life insurance policies tend to be purchased as investment vehicles, whereas property/casualty products are purchased to protect the consumer from financial loss. As a result, property/casualty companies tend to invest in short-term, liquid investments (which are generally considered to be lower risk) due to the relatively shorter duration of liabilities.

As of December 31, 2018, the life insurance industry held more than 17 times the amount of recorded surplus in admitted assets whereas property/casualty insurers held less than three times the amount of surplus in admitted assets[128].

*Subsidiary Insurance Companies and Miscellaneous Other Amounts*

The $R_0$ charge considers the risks associated with investments in affiliated entities as well as miscellaneous off-balance sheet and other items.

Affiliated investments fall into two broad categories: insurance affiliates that are subject to RBC and affiliates that are not subject to RBC. The latter group includes insurance affiliates that are not subject to RBC, such as title insurers, monoline financial guaranty insurers, and monoline mortgage guaranty insurers, all of which are currently exempt from the RBC system.

[127] Operational Risk is added as a final step in the calculation, after applying the covariance adjustment between other risk types, and does not have a corresponding "R" indicator.

[128] S&P Global Market Intelligence, based on YE2018 Annual Statement data.

$R_0$ contains the risk charges associated with affiliated insurers subject to RBC (whether property/casualty, life or health), along with alien insurance affiliates.[129] All other affiliates are subject to $R_2$ charges.

The miscellaneous off-balance sheet and other items component includes non-controlled assets, guarantees for affiliates, contingent liabilities and deferred tax assets admitted under statutory-basis accounting.

*Asset Risk*

Within the property/casualty RBC formula, there are three categories of asset risk:

$R_1$ Asset risk — Fixed income
$R_2$ Asset risk — Equity
$R_3$ Asset risk — Credit

$R_1$ and $R_2$ are risks associated with admitted invested assets (other than those already captured in $R_0$), which are shown on lines 1 through 11, column 3, on the asset side of the statutory balance sheet on page 2 of the Annual Statement. The $R_1$ charge considers changes in interest rates and potential default of fixed income investments (e.g., cash, bonds, mortgage loans). The $R_2$ charge considers changes in asset valuations for non-fixed income investments (e.g., stocks, real estate).

As of December 31, 2018, bonds represented approximately 51% of the admitted assets of the property/casualty insurance industry, with the next largest investment category dropping to 20%, represented by holdings of common (19%) and preferred (<1%) stocks, and 5% in cash.[130]

$R_3$ considers the credit risk associated with receivables on the balance sheet, which include items listed on lines 14 and subsequent on the asset side of the statutory balance sheet, as well as risk associated with reinsurance recoverables. Additionally, if a company has written 5% or more of its premiums in accident & health lines in the last three years, it is also subject to a Health Credit Risk charge.

*Underwriting Risk*

There are two categories of underwriting risk in the property/casualty RBC formula:

$R_4$ Underwriting risk — Reserves
$R_5$ Underwriting risk — Net written premium

The reserve risk charge ($R_4$) is concerned with past business while the premium risk charge ($R_5$) is concerned with future business. Reserve risk is the risk that the company's recorded loss and loss

[129] According to the Glossary of Terms in the textbook *Property-Casualty Insurance Accounting* issued by Insurance Accounting & Systems Association, Inc., 8th ed. (2003), First Addendum (2006), an alien insurance company is defined as "An insurer or reinsurer domiciled outside the U.S. but conducting an insurance or reinsurance business in the U.S."
[130] S&P Global Market Intelligence, based on YE2018 Annual Statement data

adjustment expense (LAE) reserves will develop adversely, under the assumption that the current reserve balance is adequate. Written premium risk considers the risk that the company's business in the following year will be unprofitable.

According to the NAIC RBC instructions, "Underwriting risk is the largest portion of the risk-based capital charge for most property/casualty insurance companies and makes up approximately 55 percent of the aggregate industry risk-based capital prior to the covariance adjustment."[131] This contrasts with life insurance companies, where the predominant portion of the RBC charge is asset risk.

Property/casualty insurance companies tend to concentrate in short-term, relatively fixed and liquid investment categories given the short duration of most property/casualty insurance products sold and the need to have funds readily available to pay claims. The smaller volume and relatively short-term nature of the assets for property/casualty insurance companies significantly limits the asset risk relative to the size of underwriting risk, as compared to life insurance companies.

*Catastrophe Risk*

The catastrophe risk charge ($R_{cat}$) was added to the RBC formula in 2017 after more than a decade of development.[132] It covers risks associated with earthquake and hurricane events and considers modeled losses at the worst year in 100. Projected losses can be calculated using one of the approved commercially available catastrophe models (e.g., AIR, RMS, EQECAT). Beginning in 2019, companies will also be able to use their own internally developed catastrophe model, upon obtaining written permission by their domestic (where model output is used for a single entity) or lead state (where model output is used for the whole group) insurance regulator.

The catastrophe risk charge applies on a net of reinsurance basis, with a corresponding contingent credit risk charge for certain categories of reinsurers.

*Covariance Adjustment*

Risk charges $R_0$ through $R_{cat}$ are aggregated in the RBC formula to calculate the overall RBC requirement, before the consideration of operational risk, as follows[133]:

$$R_0 + \sqrt{R_1^2 + R_2^2 + R_3^2 + R_4^2 + R_5^2 + R_{cat}^2}$$

$$= \text{Total RBC After Covariance Before Basic Operational Risk}$$

[131] NAIC, *RBC Property & Casualty 2018 Forecasting & Instructions,* page 20.

[132] Catastrophe Risk was included as part of RBC filings on an informational only basis only from 2013-16 as part of the development phase.

[133] Note that under certain circumstances, discussed later, half of the reinsurance component of $R_3$ is moved in to $R_4$ for the purpose of the covariance adjustment calculation

The square root calculation within the RBC formula is commonly referred to as the "covariance adjustment." Rather than summing up the individual risk charges ($R_1$ through $R_{cat}$), it is assumed that the individual risk charge categories are independent of one another. That is, the formula reflects diversification among these risk categories, thereby assuming that the aggregate risk is less than the sum of risk of the independent components. For example, the formula assumes that the risk of default on an insurance company's invested assets (e.g., bonds, stocks) is independent of the performance of its loss reserves. Taking the square root of the sum of the squares for $R_1$ through $R_{cat}$ increases the dependency of the larger risks in the calculation and decreases the significance of the smaller risk categories in the overall aggregate RBC requirement.

$R_0$ is kept outside of the covariance adjustment because the risk for investments in insurance company subsidiaries is believed to be directly correlated with the combination of the risks specific to the reporting entity (i.e., the other risk charges $R_1$ through $R_{cat}$). Therefore, the risk for investments in insurance company subsidiaries is additive to the aggregate of the investment and underwriting risks of the reporting entity for which RBC is being calculated. In other words, RBC should not depend on the organizational structure of the insurance company and investments in insurance company subsidiaries that are subject to RBC do not provide a diversification benefit.

The covariance calculation is applied similarly in the life and health RBC formulas, keeping $C_0$ and $H_0$ outside of the square root like $R_0$.

*Basic Operational Risk*

Introduced in 2018,[134] the basic operational risk charge considers the risk of financial loss resulting from operational events, such as the inadequacy or failure of internal systems, personnel, procedures or controls, as well as external events. This includes legal risk but excludes reputational risk arising from strategic decisions. The risk charge accounts for operational risks that are not deemed to be already reflected in the existing risk categories.

The basic operational risk charge uses a percentage of RBC or "add-on" approach that applies a risk factor to the Total RBC After Covariance Before Basic Operational Risk amount described above. The operational risk charge will be reduced by the sum of offset amounts reported by direct Life RBC filing insurance subsidiaries adjusted for the percentage of ownership in the direct life insurance subsidiaries (but not to produce a charge that is less than zero).

*Components of the Charges*

Within subsequent sections of this chapter, we will walk through the components of each charge that goes into the RBC formula, deliberately leaving out certain information that would be necessary to fully prepare and issue the RBC report for a company. We will reference the requirements of the RBC formula

[134] The operational risk charge was formally introduced in 2017, but applied a 0% risk charge that year

as it stands for year-end 2018 submissions, noting in a few places modifications that are expected in the 2019 version of the RBC formula.

The NAIC issues instructions on how to prepare the RBC calculation, including an instructional forecasting spreadsheet containing an example of the necessary formulas. Additionally, RBC software is available from Annual Statement software vendors and is used by insurance companies for filing with state regulatory authorities. This publication is only intended to provide an overview of the RBC formula and is not intended to supplant the NAIC RBC instructions or electronic filing requirements.

Before we delve into the details, let us provide some perspective on the relevance of each risk category to the overall formula. Table 75 provides a summarization of figures provided by the NAIC in its presentation of 2018 RBC results for the property/casualty insurance industry:[135]

[135] NAIC, *Summary: Aggregate P/C RBC Results By Year*, 2018, http://www.naic.org/documents/research_stats_rbc_results_pc.pdf

TABLE 75

| Aggregate for 2,465 Property/Casualty Companies<br>RBC by Category<br>USD in $million | |
|---|---|
| **2018 Risk Category** | **Totals** |
| $R_0$ — Subsidiary Insurance Companies and Misc. Other Amounts | 58,786 |
| $R_1$ — Asset Risk — Fixed Income | 8,046 |
| $R_2$ — Asset Risk — Equity | 119,069 |
| $R_3$ — Asset Risk — Credit | 9,301 |
| $R_4$ — Underwriting Risk — Reserves | 114,979 |
| $R_5$ — Underwriting Risk — Net Written Premium | 75,532 |
| $R_{cat}$ — Catastrophe Risk | 52,510 |

Asset Risk – Equity ($R_2$) and Underwriting Risk – Reserves ($R_4$) represented the largest risk charges within the RBC formula for the property/casualty insurance industry in 2018, with $119 billion and $115 billion respectively.

Despite representing approximately half of the invested assets of the property/casualty insurance industry in 2018 (see Table 2), the asset risk charge for fixed income investments is the smallest component of the RBC charge for the industry. This is because property/casualty insurers tend to invest in relatively safe, high-credit quality bonds.

On the other hand, the asset risk charge for equity brings the highest charge, reflecting the increased risk associated with these investments over fixed income. The NAIC's report on 2018 RBC results shows that the equity risk component has been growing in significance relative to other risk charges over the past decade, becoming the largest risk component for the first time in 2017. This reflects a period where common stocks have increased from 12% of property/casualty insurers' total admitted assets in 2008 to 19% in 2018.

Table 76 shows the impact of the Covariance Adjustment. Applying the sum-of-squares approach to the $R_1$ through $R_{cat}$ charges reduces the combined total of these risk charges by approximately 50%, reflecting independence between each of the risk types.

TABLE 76

| **Aggregate for 2,465 Property/Casualty Companies RBC by Category USD in $million** | | | | |
|---|---|---|---|---|
| **2018 Risk Charges for $R_1$ through $R_{cat}$** | **Totals** | **Distribution** | **Squared Totals** | **Distribution** |
| $R_1$ — Asset Risk — Fixed Income | 8,046 | 2% | 64,738,615 | 0% |
| $R_2$ — Asset Risk — Equity | 119,069 | 31% | 14,177,508,681 | 39% |
| $R_3$ — Asset Risk — Credit | 9,301 | 2% | 86,512,359 | 0% |
| $R_4$ — Underwriting Risk — Reserves | 114,979 | 30% | 13,220,264,494 | 37% |
| $R_5$ — Underwriting Risk —Net Written Premium | 75,532 | 20% | 5,705,129,401 | 16% |
| $R_{cat}$ — Catastrophe Risk | 52,510 | 14% | 2,757,330,871 | 8% |
| Sum of $R_1 – R_{cat}$ | 379,438 | 100% | 36,011,484,420 | 100% |
| Total RBC (excl $R_0$) After Covariance Before Basic Operational Risk | 189,767 | *= square root of the sum of Squared Totals above* | | |
| *Covariance Adjustment* | *- 189,672* | | | |

Recall that the covariance adjustment increases the dependency of the larger risks and decreases the significance of the smaller risk categories in the overall aggregate RBC requirement. As displayed in the Table 76, squaring each of charges $R_1$ through $R_{cat}$ and summing the results shows the increased significance of the two largest risk categories ($R_2$ and $R_4$), which now contribute 76% to the total on a squared basis, up from 61% based on a simple sum. The other risk categories have similarly seen their contribution shrink.

THE RBC CHARGE FOR SUBSIDIARY INSURANCE COMPANIES AND MISCELLANEOUS OTHER AMOUNTS ($R_0$)

The $R_0$ charge considers the risks associated with investments in subsidiary insurance companies as well as miscellaneous off-balance sheet and other items.

Subsidiary and affiliated insurance companies are only considered within $R_0$ if they are U.S. domiciled entities subject to RBC, or if they are alien insurers (i.e., foreign to the U.S.). Recall that certain insurance companies are not subject to RBC, such as title insurers, monoline mortgage guaranty insurers and monoline financial guaranty insurers. All other affiliated entities, including U.S. insurance subsidiaries not subject to RBC, are considered within the Asset Risk – Equity ($R_2$) module.

*Selected definitions*

Term definitions will become important as we walk through the risk charges for affiliated entities. Statutory Accounting Principles (SAP), specifically Statement of Statutory Accounting Principles (SSAP) No. 97, *Investments in Subsidiary, Controlled and Affiliated Entities*, define the following terms:

| | |
|---|---|
| Parent | "An entity that directly or indirectly owns and controls the reporting entity."[136] |
| Subsidiary | "An entity that is, directly or indirectly, owned and controlled by the reporting entity."[137] |
| Affiliate | "An entity that is within the holding company system or a party that, directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with the reporting entity. An affiliate includes a parent or subsidiary and may also include partnerships, joint ventures, and limited liability companies."[138] |
| Control | "The possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of the investee, whether through the (a) ownership of voting securities, (b) by contract other than a commercial contract for goods or non-management services, (c) by common management, or (d) otherwise. Control shall be presumed to exist if a reporting entity and its affiliates directly or indirectly, own, control, hold with the power to vote, or hold proxies representing 10% or more of the voting interests of the entity."[139]<br><br>SSAP No. 97 further states that control is measured at the holding company level. For example, the 10% benchmark would apply to a group consisting of two affiliates where one affiliate owns 7% of a company and the other affiliate owns 4% of that same company. Each member of the group has control over the company as the sum of their ownership percentages exceeds 10%. |
| Investments in SCA entities | An insurance company's investment in subsidiaries, controlled and affiliated entities (SCAs), are admitted assets to the extent they conform to the requirements of SSAP No. 97. |

*Insurance Affiliates Subject to RBC*

For U.S. insurers subject to RBC, including those subject to the life or health RBC requirements, the total $R_0$ charge for a particular subsidiary is limited to the RBC of the subsidiary, across all common stocks and

[136] SSAP No. 97, Investments in Subsidiary, Controlled and Affiliated Entities, "Definitions" section.
[137] Ibid.
[138] Ibid.
[139] Ibid.

preferred stocks, adjusted by the reporting entity's ownership (pro rata) share in the subsidiary. The theory is that, through ownership, the reporting entity is subject to the same risks as its subsidiary.

According to the NAIC's 2018 written instructions for RBC,[140] the relevant RBC measure from the subsidiary or affiliate is defined as:

- For a P/C and Health subsidiary RBC filings:
    - Total RBC After Covariance Before Basic Operational Risk

- For a Life subsidiary RBC filing, the sum of:
    - Total RBC After Covariance Before Basic Operational Risk
    - Primary Security shortfalls for all cessions covered by Actuarial Guideline XLVIII, multiplied by two

*Ownership of Common Stock*

The RBC charge for investments of an insurance company subsidiary depends on the accounting method used by the reporting entity to report the investment.[141]

For investments in insurance affiliates recorded on the equity method, and for which unamortized admitted goodwill is zero or non-existent (i.e., no adjustment to the book/carrying value of the investment), the $R_0$ charge for ownership of common stock in the insurance affiliate subject to RBC is equal to the *minimum* of the following:

- The total RBC of the affiliate multiplied by the percentage of ownership in the common stock
- The book/adjusted carrying value of the common stock (greater than 0) as recorded by the reporting entity

For all other insurance affiliates, the $R_0$ charge for ownership of common stock in these affiliates is made up of two components:

1. An $R_0$ component, which is equal to the *minimum* of the following:
    a. The total RBC of the affiliate multiplied by the percentage of ownership in the common stock; or
    b. The statutory surplus of the affiliate multiplied by the percentage of ownership of the total common stock.

[140] NAIC *RBC Property & Casualty 2018 Forecasting & Instructions,* page 1.

[141] According to SAP (SSAP No. 97), admitted investments in insurance company SCAs are recorded on the reporting entity's balance sheet using one of two methods: the market valuation approach or equity method. Under the market valuation approach, investments in insurance company SCAs are based on the market value of the SCA, adjusted for the reporting entity's ownership percentage. Market value is equivalent to fair value. Under the equity method, investments in insurance company SCAs are recorded based on the reporting entity's proportionate share of audited statutory equity of the SCA's balance sheet, adjusted for any unamortized goodwill. Under this method, the reporting entity records the initial investment at cost then essentially adjusts the value over time based on the reporting entity's share in the company's income (loss). At any point in time, the recorded amount is called the "carrying value."

2. An $R_2$ component, which is equal to one of the following (limited to a minimum of zero):
    a. The amount of the book/carrying value that exceeds the value from the $R_0$ component (above), when the total RBC of the affiliate multiplied by the percentage of ownership in the common stock is greater than the book/carrying value; otherwise
    b. The *maximum* of the following:
        i. The excess of the book/adjusted carrying value over the pro rata statutory surplus value for the affiliate multiplied by 22.5%; or
        ii. The amount that RBC of the affiliate multiplied by the percentage of ownership in the common stock exceeds the value obtained in the $R_0$ component (above).

Recall that RBC calculations are not in the public domain. Attempts to recalculate an insurance company's RBC often make a simplifying assumption that the $R_0$ charge for ownership in common stock of an SCA is equal to the SCA's RBC (adjusted for ownership).

*Ownership of Preferred Stock*

The reporting entity's $R_0$ charge for investments in preferred stock of insurance subsidiaries depends on whether the subsidiary has excess RBC. Excess RBC is defined as the amount of RBC of the affiliate that exceeds the total value of the outstanding common stock. If the excess RBC is greater than zero, the RBC charge for ownership in preferred stock is the *minimum* of the following:

- The pro rata share of the excess RBC
- The book/adjusted carrying value of the preferred stock (greater than zero) as recorded by the reporting entity

The pro rata share is equal to the percentage of the affiliate's total outstanding preferred stock value that is owned by the company. To determine the value of total outstanding common stock or total outstanding preferred stock, divide the book/adjusted carrying value of the investment by the percentage of ownership.

If the excess RBC is less than or equal to zero, then the RBC charge for the company's ownership in the preferred stock of its affiliate is zero.

Occasionally, a company might own preferred stock in an affiliate subject to RBC but no common stock. When this occurs, the company must determine if there is any excess by calculating the notional value of the total outstanding value of the affiliate's common stock and/or preferred stock using one of the accepted methods from the *Purposes and Procedures Manual of the NAIC Investment Analysis Office*.

*Alien Insurance Affiliates*

Alien insurance companies are entities that are incorporated under the laws of a country outside the U.S., therefore these entities are not themselves subject to RBC. The reporting entity's RBC charge for investments in directly owned alien affiliates is equal to the Annual Statement carrying value of the

company's interest in the affiliate multiplied by a factor of 0.500. For indirectly owned alien affiliates, this amount is further adjusted to reflect the reporting entity's ownership on the holding company.

*Off-balance Sheet and Other Items*

Off-balance sheet and other items include amounts that are either restricted or not recorded by the insurance company in its statutory financial statements yet still represent assets and/or potential liabilities of the insurance company and therefore expose the company to risk. Off-balance sheet and other items are disclosed in the Notes to Financial Statements and General Interrogatories of the Annual Statement. The following represents the categories of such items included in the $R_0$ charge:

1. *Non-controlled assets:* This category of assets includes the following:
    - Collateral loaned to others from securities lending programs
    - Assets that are reported on the company's balance sheet but for which the company does not have exclusive control over, thereby exposing the company to increased investment risk
    - Assets sold or transferred that are subject to a put option, thereby enabling the purchaser to sell the assets back to the insurance company
2. *Guarantees for the benefit of affiliates:* These are guarantees that may expose the company's assets to contingent liability exposure. An example would be a guarantee made by a company to pay an outstanding loan held by an affiliate with a third party in the event that the affiliate was unable to meet its obligation to that third party.
3. *Contingent liabilities:* This includes amounts for which the insurance company may be held responsible but for which the amount cannot be determined and therefore is not entered on the balance sheet. An example includes structured settlements for which the insurance company purchases an annuity from a life insurance company to make structured payments to claimants in order to close out a claim. The insurance carrier would close the claim since it paid the life insurer to make the claim payments on its behalf. However, if the life insurance company fails to pay, the insurance company would still be ultimately responsible for settling the liability. This is a contingent liability to the insurance company.
4. *Deferred tax assets:* This comprises admitted adjusted gross deferred tax assets (DTAs) as described in SSAP No. 101, paragraphs 11a and 11b. The source for the DTA amounts to use in the calculation is found in the Annual Statement, Notes to the Financial Statements, Note 9, Part A, Section 2.

For almost all of the items listed above, a 1.0% factor is applied to all off-balance sheet amounts for purposes of inclusion in the $R_0$ charge. The one exception is for conforming securities lending programs,

which are those programs that have specified elements that lower the associated risk,[142] where a reduced charge of 0.2% is applied.

Additionally, the charge associated with deferred tax assets can be reduced to 0.5% when the insurance company either filed its own separate Federal income tax return or was included in a consolidated Federal income tax of which the common parent is an insurance company.

THE RBC CHARGE FOR ASSET RISK ASSOCIATED WITH FIXED INCOME INVESTMENTS ($R_1$)

$R_1$ includes the charge for interest rate and default risk associated with fixed income investments in the following categories:

1. Bonds
2. Off-balance sheet collateral and Schedule DL, Part 1, Assets
3. Other long term assets, including mortgage loans, low income housing tax credits and working capital finance investments
4. Miscellaneous assets, including cash, cash equivalents, other short-term investments and non-admitted collateral loans
5. Replication (synthetic asset) transactions and mandatorily convertible securities

Typically, the charge relating to bonds overwhelmingly dominates this risk category for property/casualty insurers. In general, the charge for each of these investment types is based on a factor determined by the NAIC multiplied by the book/adjusted carrying value of the investment.

In addition to the charge for the aforementioned types of fixed income investment categories, there are two charges reflecting the level of diversification in the entity's fixed income portfolio. The first is the bond size factor, and the second is the asset concentration factor. The fewer the bond holdings and greater the concentration in individual issuers or borrowers, the greater the associated charge.

A brief discussion of each charge is provided below, with examples to illustrate their calculation as deemed appropriate.

*Bonds and the Bond Size Factor*

[142] According to the NAIC *RBC Property & Casualty 2018 Forecasting & Instructions*, page 16, conforming securities lending programs are those comprising all of the following: (1) a written plan approved by the company's board of directors describing the company's securities lending program and ways it can invest collateral; (2) written procedures that the company must follow to monitor and control the risks of the program; (3) a binding agreement between the insurance company and the borrowers of the insurer's securities; and (4) collateral in the form of investments that are allowable by the company's domiciliary state (e.g., cash, cash equivalents, federally guaranteed investments).[143] NAIC, *RBC Property & Casualty 2018 Forecasting & Instructions,* page 7.

The RBC charge for unaffiliated bond investments is equal to the book/adjusted carrying value of the bond multiplied by a factor, where the factors vary based on the bond class. The factors are as shown in Table 77.

TABLE 77

| NAIC bond class | RBC factor |
|---|---|
| Class 01 — Highest credit quality | |
| - U.S. government, guaranteed by U.S. government | 0.000 |
| - U.S. government, not backed by full faith and credit of U.S. government | 0.003 |
| - All other | 0.003 |
| Class 02 — High credit quality | 0.010 |
| Class 03 — Medium credit quality | 0.020 |
| Class 04 — Low credit quality | 0.045 |
| Class 05 — Lowest credit quality | 0.100 |
| Class 06 — In or near default | 0.300 |

As displayed in Table 77, the RBC factors increase with the amount of perceived credit risk, starting with 0.000 for U.S. government bonds that are backed by the full faith and credit of the government and therefore have almost no default risk, all the way to a factor of 0.300 for bonds issued by companies that are in or near default. According to the NAIC RBC instructions, the bond factors are determined "based on cash flow modeling using historically adjusted default rates for each bond category." The instructions further explain: "For each of 2,000 trials, annual economic conditions were generated for the 10-year modeling period. Each bond of a 400-bond portfolio was annually tested for default (based on a "roll of the dice") where the default probability varies by NAIC designation category and that year's economic environment."[143]

In addition to the charge for each class of bond, there is a separate charge to reflect the level of diversification called the bond size factor. According to the NAIC RBC instructions, "The size factor reflects additional modeling for different size portfolios that shows the risk increases as the number of bond issuers decreases. Because most insurers' bond portfolios are considerably smaller than the portfolio used to develop the model bond risk, the basic bond factors understate the true default risk of these assets. The bond size factor adjusts the computed RBC for those bonds that are subject to the size factor to more accurately reflect the risk."[144]

The bond size factor, which measures the degree of diversification in the investment portfolio, is computed as the weighted average number of issuers in a portfolio subject to the adjustment, with the weights prescribed by the NAIC depending on the number of issuers. Table 78 displays the formula, including the NAIC weights.

TABLE 78

[143] NAIC, *RBC Property & Casualty 2018 Forecasting & Instructions,* page 7.
[144] Ibid.

| Bond Size Factor | | | |
|---|---|---|---|
| | # of bond issuers | Weights | Weighted # Issuers |
| | *(1)* | *(2)* | *(3) = (1) * (2)* |
| First 50 | XXXX | 2.5 | |
| Next 50 | XXXX | 1.3 | |
| Next 300 | XXXX | 1.0 | |
| More than 400 | XXXX | 0.9 | |
| Total | XXXX | | |

The bond size factor is equal to the total in column 3 divided by the total in column 1 in Table 79, minus 1. For example, if a reporting entity invests in 500 bonds, the bond size factor would be 0.2. The calculation of this factor is provided in Table 79 as the sum of the weighted number of issuers in column 3 of 580 divided by the total number of issuers in column 1 of 500, minus 1.

TABLE 79

| Example of Bond Size Factor | | | |
|---|---|---|---|
| | # of bond issuers | Weights | Weighted # Issuers |
| | *(1)* | *(2)* | *(3) = (1) * (2)* |
| First 50 | 50 | 2.5 | 125 |
| Next 50 | 50 | 1.3 | 65 |
| Next 300 | 300 | 1.0 | 300 |
| More than 400 | 100 | 0.9 | 90 |
| Total | 500 | 1.2 | 580 |

The bond size factor is applied to the RBC calculated for bonds subject to adjustment. As displayed in Table 79, the weights decrease with the number of issuers. Therefore, the more issuers, the lower the factor applied in the RBC calculation and the lower the additional RBC amount required. For a reporting entity investing in fewer than 50 bonds, the factor is 1.5 times the RBC required for the bonds (=2.5 – 1); for an entity investing in 1,000 bonds, the factor is 0.03.[145]

The bond size factor is calibrated such that the break-even point where the factor equals 1.0 is set at 1,300 bonds. Portfolios containing 1,300 or more bonds will receive a discount to their RBC charge for bonds.

Bonds that are subject to the bond size factor include unaffiliated bonds in classes 02 through 06, plus non-U.S. government bonds in class 01.

[145] 0.03 = [[(50*2.5) + (50*1.3) + (300*1.0) + (600*0.9)] / (1,000)] – 1.0

*Off-balance Sheet Collateral and Schedule DL, Part 1, Assets*

The RBC charge for off-balance sheet collateral and Schedule DL assets considers the risk associated with securities lending programs. Recall the discussion of securities lending programs in Chapter 13. *Overview of Schedules and Their Purpose*. The risk associated with these programs is that the reporting entity will lose money on the reinvestment of collateral posted by the borrower. Collateral held by the reporting entity in conjunction with securities lending programs is reported one of three ways in the Annual Statement:

1. In investment schedules that correspond to the invested collateral (e.g., Schedule A, B, BA, D, DA and E), which roll up into the balance sheet
2. In Schedule DL, Part 1, of the Annual Statement, which rolls into line 10 of the asset side of the balance sheet
3. Off-balance sheet, due to not being recorded in the financial statements

The $R_1$ charge considered herein includes a provision for these assets as included in items 2 and 3 above. The charge is equal to the book/adjusted carrying value multiplied by a factor, where the factor is equal to that for the particular asset class. For example, the same factors by class applicable to bonds are also used in this calculation.

*Other long term assets – Mortgage loans*

The RBC charge for mortgage loans for property/casualty insurers is computed as the book/adjusted carrying value of the loans multiplied by a factor of 0.050. This is based upon the factors developed by the Life RBC formula, which ranged from 3% to 20%.

*Other long term assets – Working Capital Finance Investments*

The booked/adjusted carrying value of working capital finance investments can be found in the Notes to Financial Statements, lines 5M(01a) and 5M(01b) in column 3, of the Annual Statement. Those in line 5M(01a) – NAIC Designation 1 – get a risk charge of 0.0038, while those in 5M(01b) – NAIC Designation 2 – have a factor of 0.0125.

*Low Income Housing Tax Credits (LIHTC)*

There are five categories of LIHTC investments listed below, which must be reported in accordance with Statement of Statutory Accounting Principles (SSAP) No. 93, *Low Income Housing Tax Credit Property Investments*:

- Federal guaranteed
- Federal non-guaranteed
- State guaranteed
- State non-guaranteed

- All other

The associated NAIC factor used to calculate the RBC charge varies by category.

In order to be classified as a federal guaranteed LIHTC investment, it must have an all-inclusive guarantee from an ARO[146]-rated entity which guarantees the yield on the investment. The RBC charge for a federal guaranteed LIHTC investment is equal to the book/adjusted carrying value times 0.0014.

To be classified as a federal non-guaranteed LIHTC investment, it must include the following risk mitigation factors:

a) A level of leverage below 50%. For an LIHTC fund, the level of leverage is measured at the fund level; and
b) A tax credit guarantee agreement from a general partner or managing member, requiring the general partner or managing member to reimburse investors for any shortfalls in tax credits due to errors of compliance. For an LIHTC fund, a tax credit guarantee is required from the developers of the lower-tier LIHTC properties to the upper-tier partnership.

The RBC charge for a federal non-guaranteed LIHTC investment is equal to the book/adjusted carrying value times 0.0260.

To be classified as a state guaranteed LIHTC investment, it must minimally meet the federal requirements for guaranteed LIHTC investments. The RBC charge for a state guaranteed LIHTC investment is equal to the book/adjusted carrying value times 0.0014.

To be classified as a state non-guaranteed LIHTC investment, it must minimally meet the federal requirements for non-guaranteed LIHTC investments. The RBC charge for a state non-guaranteed LIHTC investment is equal to the book/adjusted carrying value times 0.0260.

All other federal and state LIHTC investments that do not meet the requirements of the above categories will be classified in the All Other LIHTC investments category. The RBC charge for all other LIHTC investments is equal to the book/adjusted carrying value times 0.1500.

*Miscellaneous Assets*

The RBC charge for miscellaneous assets is computed as a factor times the book/adjusted carrying value for those assets that are in excess of amounts considered elsewhere in the RBC formula, if any. The RBC charges for each investment are as follows (not less than zero):

- 0.003 times the book value of cash, net cash equivalents and other short-term investments

[146] NAIC's Acceptable Rating Organizations

- The NAIC recognize that there is a small risk related to the possible insolvency of the bank where cash deposits are held. The 0.3% factor, equivalent to an unaffiliated NAIC 01 bond, reflects the short-term nature of this risk.

- 0.050 times admitted collateral loans and write-ins
  - These are generally a small proportion of total portfolio value. A factor of 5.0% is consistent with other RBC formulas studied by the NAIC working group.

*Replication (Synthetic Asset) Transactions and Mandatory Convertible Securities*

Assets included within this category are defined in the NAIC RBC instructions as follows:

"A replication (synthetic asset) transaction is a derivative transaction entered into in conjunction with other investments in order to reproduce the investment characteristics of otherwise permissible investments…

A mandatory convertible security is defined as a type of convertible bond that has a required conversion or redemption feature. Either on or before a contractual conversion date, the holder must convert the mandatory convertible security into the underlying common stock. Mandatory convertible securities are subject to special reporting instructions and are therefore not assigned NAIC designations or Unit Prices by the SVO. The balance sheet amount for mandatory convertible securities shall be reported at the lower of amortized cost or fair value during the period prior to conversion… Upon conversion, these securities will be subject to the accounting guidance of the SSAP that reflects their revised characteristics." [147]

To expand upon the discussion about derivatives in Chapter 8. *The Statutory Income Statement: Income and Changes to Surplus* and Chapter 13. *Overview of Schedules and their Purpose*, insurance companies use derivative transactions for one of three reasons:

1. Hedge or mitigate risk
2. Generate income
3. Replicate an asset that cannot be purchased in the cash market because it is either too expensive or unavailable[148]

As stated previously, derivative holdings by property/casualty insurers are small relative to those held by life insurance companies. This somewhat explains the low-risk charge for this category.

[147] NAIC, *RBC Property & Casualty 2018 Forecasting & Instructions,* page 10.
[148] Memorandum to NAIC Investment Risk Based Capital (RBC) Working Group from Walter Givler – Northwestern Mutual Life, Mark Anderson – Met Life and other members of the ACLI Derivative Risk Management Team, dated March 29, 2013, Re: Life Insurer RBC for Derivatives.
http://www.naic.org/documents/committees_e_capad_investment_rbc_wg_exposures_derivatives.pdf.

Replication (synthetic asset) transactions are commonly referred to as "RSATs" and are reported in Schedule DB of the Annual Statement. An RSAT is a package of a derivative(s) and a cash instrument(s). The cash instrument is generally a bond.

The RBC charge for RSATs is equal to the RBC factor applicable for the asset the RSAT is replicating, multiplied by the statement value of the transaction from Schedule DB. Credit is given for the RBC charge already applied to the cash instrument. For example, if the cash instrument is a bond, then the cash component of the RSAT is recorded as a bond on the company's balance sheet and has already received a risk charge based on its bond characterization. The RBC for RSATs is adjusted to remove the RBC previously calculated for the subject bond.

A mandatory convertible security is reported in the Annual Statement schedule that corresponds to the security pre-conversion. For example, assume an insurer holds a bond that is mandatorily convertible into a fixed number of shares of common stock within three years. The bond will be reported in the company's balance sheet and will therefore receive an RBC charge based on its NAIC bond class. However, the insurer is not only exposed to risks associated with the bond, but also the risk associated with the common stock that it will convert to sometime over the next three years, since the bond's principal will be used to purchase the shares. The RBC charge for mandatory convertible securities adjusts the RBC charge upward if the security that results from conversion is more risky. Since unaffiliated common stocks have a RBC charge of 0.15, and bonds have a charge between 0.00 and 0.30, depending on class, the RBC charge will be adjusted upward by the maximum of the difference between the RBC charge for the stock and bond, and zero. This is similar to the application of the RBC charge for RSATs; the RBC charge for mandatory convertible securities is equal to the RBC charge for the converted security, reduced by the RBC charge for the original security.

Half of the charge for RSATs and mandatory convertible securities is applied to $R_1$, with the remaining half applied to $R_2$. This assumes that half of the securities in the calculation are fixed income and half are equity.

*Asset Concentration Factor*

The asset concentration factor doubles the RBC charge for the 10 largest issuers that the insurance company is exposed to. The purpose of this charge is to reflect the increased risk associated with large concentrations in single issuers.

The 10 largest issuers are determined by first summing the insurer's total investment (book/adjusted carrying value) across all investments (fixed income plus equity) for each issuer. The total amounts for each issuer are then sorted from largest to smallest to determine the top 10. The RBC charge for each fixed income and equity asset is computed for the 10 largest issuers. The resulting RBC charge for fixed income is included as the asset concentration RBC charge within $R_1$; the resulting RBC charge for equity

is included as the asset concentration RBC charge within $R_2$.[149] The RBC charge is limited to a maximum of 0.300 for each fixed income and/or equity investment.

However, not all assets are subject to the asset concentration factor, as certain assets are deemed to be of low risk or have already received the maximum charge of 0.300. The assets excluded from the additional charge are also excluded in determining the 10 largest issuers.

Fixed income assets that are subject to the asset concentration factor include the following:

- Bonds in classes 02 through 05[150]
- Collateral loans
- Mortgage loans
- Working Capital Finance Investments – NAIC 02
- Low Income Housing Tax Credits

$R_2$ assets that are subject to the asset concentration factor include the following:

- Unaffiliated preferred stocks and hybrid securities in classes 02 through 05
- Hybrid securities in classes 02 through 05
- Unaffiliated common stock
- Investment in real estate
- Encumbrances on invested real estate
- Schedule BA assets (excluding collateral loans)
- Receivable for securities
- Aggregate write-ins for invested assets
- Derivatives

The following provides a simplified example to illustrate the calculation of the asset concentration factor.

Assume that the fixed income and equity investments made by an insurance company that are subject to the asset concentration factor are limited to 15 issuers and investments in these issuers are limited to the assets listed in the Table 80 below. The following provides the total adjusted book/carrying value of these investments sorted from highest to lowest value by issuer[151].

TABLE 80

| *Example* |
|---|

[149] The asset concentration *factor* can be computed as the weighted average of the total asset concentration RBC charge with the total subject assets.
[150] Unaffiliated bonds in class 01 are excluded because they are deemed to be of low risk; unaffiliated bonds in class 06 are excluded because they already receive the maximum charge of 0.300.
[151] Note, for simplicity, only certain assets were included in the example.

*Adjusted Book/Carrying Value for Assets Subject to Asset Concentration USD in 000s*

| | | Fixed Income Assets | | Equity Assets | | | |
|---|---|---|---|---|---|---|---|
| Issuer Name | | Unaffiliated Bonds Class 2 - 5 | Collateral Loans | Unaffiliated Preferred Stocks Class 2 - 5 | Unaffiliated Common Stock | Investment Real Estate | Total Assets Subject to Asset Concentration |
| 1 | Asppill Drug | | | | 1,200 | | 1,200 |
| 2 | Deal Mart | | 1,000 | | | | 1,000 |
| 3 | U.S. Express | 1,000 | | | | | 1,000 |
| 4 | MacroHard Inc. | 900 | | | | | 900 |
| 5 | Dill Computing | | | 900 | | | 900 |
| 6 | Tropical Beverage Co. | 820 | | | | | 820 |
| 7 | Popsi Co. | | | 800 | | | 800 |
| 8 | Texas Oil Inc. | 550 | | | | | 550 |
| 9 | Westwood Resorts | | 200 | | | 35 | 235 |
| 10 | Dakota Energy | 220 | | | | | 220 |
| 11 | Bear Pharmaceuticals | | | | 200 | | 200 |
| 12 | Mediapro | 200 | | | | | 200 |
| 13 | Pear Computer | | | | 100 | | 100 |
| 14 | Jane Moose | 80 | | | | | 80 |
| 15 | KO Media | | | | 25 | 50 | 75 |
| Total | | 3,770 | 1,200 | 1,700 | 1,525 | 85 | 8,280 |

Only the first ten of these issuers (Asppill Drug through Dakota Energy) are considered in the calculation of the asset concentration factor. The asset concentration charge is computed by multiplying the RBC charge for each asset class by the associated RBC factor for that class. For simplicity, assume that each of the bond investments is class 02 and each of the preferred stock investments is class 03. Table 81 provides the calculation of the asset concentration RBC charge within $R_1$ and $R_2$.

TABLE 81

*Example*
*Calculation of Asset Concentration RBC*

| Fixed Income Assets | Book/Adjusted Carrying Value | Factor | Additional RBC |
|---|---|---|---|
| Class 2 Unaffiliated Bonds | 3,490 | 0.010 | 35 |
| Class 3 Unaffiliated Bonds | - | 0.020 | - |
| Class 4 Unaffiliated Bonds | - | 0.045 | - |
| Class 5 Unaffiliated Bonds | - | 0.100 | - |
| Collateral Loans | 1,200 | 0.050 | 60 |
| Mortgage Loans | - | 0.050 | - |
| Subtotal Fixed Income | 4,690 | 0.020 | 95 |
| **Equity Assets** | **Book/Adjusted Carrying Value** | **Factor** | **Additional RBC** |

| | | | |
|---|---|---|---|
| Class 2 Unaffiliated Preferred Stock | - | 0.010 | - |
| Class 3 Unaffiliated Preferred Stock | 1,700 | 0.020 | 34 |
| Class 4 Unaffiliated Preferred Stock | - | 0.045 | - |
| Class 5 Unaffiliated Preferred Stock | - | 0.100 | - |
| Class 2 Unaffiliated Hybrid Securities | - | 0.010 | - |
| Class 3 Unaffiliated Hybrid Securities | - | 0.020 | - |
| Class 4 Unaffiliated Hybrid Securities | - | 0.045 | - |
| Class 5 Unaffiliated Hybrid Securities | - | 0.100 | - |
| Unaffiliated Common Stock | 1,200 | 0.150 | 180 |
| Investment Real Estate | 35 | 0.100 | 4 |
| Encumbrance on Investment Real Estate | - | 0.100 | - |
| Schedule BA Assets | - | 0.050 | - |
| | | | |
| Aggregate Write-Ins for Invested Assets | - | 0.050 | - |
| Derivatives | - | 0.050 | - |
| Receivable for Securities | - | 0.025 | - |
| Subtotal Equity | 2,935 | 0.074 | 218 |
| | | | |
| Grand Total Asset Concentration | | | 312 |

The asset concentration RBC charge for fixed income investments within $R_1$ is $94,900 and the asset concentration RBC charge for equity within $R_2$ is $217,500, resulting in a total asset concentration RBC charge of $312,400.

*$R_1$ for Fictitious*

To further illustrate the RBC charges, we used the Annual Statement for Fictitious Insurance Company to build a full example of the NAIC RBC calculations.[152] Because Schedule D is not included in the Annual Statement for Fictitious, we had to make assumptions in preparing the calculation, such as the distribution of fixed assets by RBC class. Table 82 provides the $R_1$ portion of the RBC calculation for Fictitious.

TABLE 82

***$R_1$ Charge for Fictitious Insurance Company***
***NAIC Risk-Based Capital* 2018**

| **$R_1$ Calculation — Fixed Income Assets** | **Amount Held** | **Charge Factor** | **RBC Charge** |
|---|---|---|---|
| Cash and Cash Equivalents | 154,000 | 0.0030 | 462 |
| Total Other Short-Term Investments | 829,000 | 0.0030 | 2,487 |
| Mortgage Bonds | 245,000 | 0.0500 | 12,250 |
| Net Admitted Collateral Loans | 0 | 0.0500 | 0 |
| **Bonds** | | | |
| U.S. Government | 6,395,684 | 0.0000 | 0 |
| Class 01 U.S. Government Agency Bonds | 0 | 0.0030 | 0 |
| Class 01 Unaffiliated Bonds | 46,060,660 | 0.0030 | 138,182 |
| Class 02 Unaffiliated Bonds | 4,987,460 | 0.0100 | 49,875 |
| Class 03 Unaffiliated Bonds | 704,112 | 0.0200 | 14,082 |
| Class 04 Unaffiliated Bonds | 352,056 | 0.0450 | 15,843 |
| Class 05 Unaffiliated Bonds | 117,352 | 0.1000 | 11,735 |
| Class 06 Unaffiliated Bonds | 58,676 | 0.3000 | 17,603 |
| Subtotal — Bonds subject to bond size factor | 58,676,000 | | 247,319 |
| **Estimated number of bonds** | 120 | | |
| | **Count** | **Multiplier** | **Weighting** |
| **0 to 50** | 50 | 2.50 | 125 |
| **50 to 100** | 50 | 1.30 | 65 |
| **100 to 400** | 20 | 1.00 | 20 |
| **More than 400** | 0 | 0.900 | 0 |
| **Sum (weighted average)** | 120 | 1.750 | 210 |
| Bond size factor RBC | 247,319 | 0.750 | 185,490 |
| Asset concentration RBC | 87,825,000 | 0.0012 | 105,390 |
| **Total $R_1$ Charge — Fixed Income Assets Risk** | | | **553,398** |

[152] Note that Fictitious Insurance Company does not have any affiliated entities or miscellaneous off-balance sheet amounts. Therefore, the $R_0$ charge is zero for Fictitious.

THE RBC CHARGE FOR ASSET RISK ASSOCIATED WITH EQUITY INVESTMENTS ($R_2$)

$R_2$ includes the charge for risk associated with equity investments in the following:

1. Affiliated investments
2. Unaffiliated stocks
3. Real estate
4. Schedule BA assets
5. Miscellaneous assets, including receivables for securities, aggregate write-ins for invested assets and derivatives
6. Replication (synthetic asset) transactions and mandatory convertible securities

Typically, investments in unaffiliated stocks and Schedule BA assets, as well as the asset concentration RBC charge, represent most of the risk charge within $R_2$ for property/casualty insurers.

As discussed for $R_0$, there is an RBC charge for the ownership of common stock in insurance affiliates which includes an $R_2$ component – this gets rolled up with the unaffiliated stocks component of the RBC formula. Additionally, for $R_1$, half of the RBC charge for replication transactions and mandatorily convertible securities listed above as item 6 is applied to $R_2$.

Similarly, there is the additional charge for asset concentration in the 10 largest issuers for each type of equity investment. The calculation is performed as described within the previous section of this chapter covering the Asset Risk – Fixed Income ($R_1$) component.

We will continue by providing a brief discussion of the charges for the different types of equity investments (items 1 through 6).

*Affiliated investments*

The following list includes the different categories of affiliated investments included in $R_2$, which can be described generally as affiliated entities not subject to RBC (other than alien affiliates):

- Investment affiliates
- Holding companies
- Upstream affiliates (parent)
- Property & Casualty insurance affiliates not subject to RBC
- Life insurance affiliates not subject to RBC
- Health insurance affiliates not subject to RBC
- Other affiliates

The $R_2$ charge for investments in insurance affiliates not subject to RBC is calculated by multiplying a factor by the book/adjusted carrying value of the common and preferred stock of those affiliates.

*Investment Affiliates*

According to the NAIC RBC Instructions, "An investment affiliate is an affiliate that exists only to invest the funds of the parent company. The term investment affiliate is strictly defined in the annual statement instructions as any affiliate, other than a holding company, engaged or organized primarily to engage in the ownership and management of investments for the insurer, not including any broker-dealer or a money management fund managing funds other than those of the parent company."[153]

In other words, the RBC charge for an investment affiliate is essentially the same as it would be if the reporting entity held the assets directly. For example, if the reporting entity owned a subsidiary that managed $1 billion of its investments in common stock, then the RBC charge for that entity would be computed based on the $1 billion common stock portfolio. If the charge for these investments would have been $10 million if the reporting entity owned the stock directly, then the charge for the investment affiliate would also be $10 million. If the entity only owned 60% of the investment affiliate, then the RBC charge would be $6 million (= 0.6 * $10 million).

The RBC charge for an investment in an investment affiliate is 0.225 times the carrying value of the common and preferred stock.

*Holding Companies*

For investment in a holding company, the RBC charge is 0.225 times the holding company value in excess of the carrying value (i.e., holding company value minus carrying value) for indirectly owned insurance affiliates.

Let's use an example to illustrate this calculation. In this example, we will use another fictional company named Reporting Entity Insurance Company (REIC).

Assume REIC purchased 100% of the shares in a holding company called HC Company in 2018. Also assume that HC Company has the following assets on its December 31, 2018, balance sheet, as illustrated in Table 83.

[153] NAIC, *RBC Property & Casualty 2018 Forecasting & Instructions,* page 5.

TABLE 83

| Total assets held by HC Company as of December 31, 2018 | | |
|---|---|---|
| **Type of asset** | **Assets 12/31/2018** | **Distribution by asset type** |
| U.S. Sub Life Insurance Company | 5,000,000 | 10% |
| U.S. Sub Property/Casualty Insurance Company | 15,000,000 | 30% |
| UK Sub Property/Casualty Insurance Company | 10,000,000 | 20% |
| Common Stock | 8,000,000 | 16% |
| Preferred Stock | 12,000,000 | 24% |
| Total assets | 50,000,000 | 100% |

U.S. Sub Life Insurance Company, U.S. Sub Property/Casualty Insurance Company and UK Sub Property/Casualty Insurance Company are directly owned by HC Company and indirectly owned by REIC as a result of REIC's ownership of HC.

Recall that book/adjusted carrying value is used in computing the $R_0$ charge. The carrying value of an indirectly owned insurance subsidiary will depend on the carrying value of the holding company and percentage of the holding company carrying value that the subsidiary represents. Let's continue our example to illustrate.

Assume that REIC carried HC Company on its Annual Statement at year-end 2018 at a value of $55 million, which is equal to the market value of the shares. Of this amount, 10%, or $5.5 million, would represent the carrying value of U.S. Sub Life Insurance Company for purposes of determining the $R_0$ charge in REIC's RBC calculation. Similarly, $16.5 million (= 0.3 * $55 million) would be the carrying value for U.S. Sub Property/Casualty Insurance Company, and $11 million is the value for the alien insurer, UK Sub Property/Casualty Insurance Company.

If REIC had only purchased, for example, 66% of the shares of HC Company, each carrying value would be adjusted by REIC's ownership interest of 66%. The corresponding values would be $3.63 million, $10.89 million and $7.26 million for the three subsidiaries of HC Company, respectively.

Now back to our discussion of the $R_2$ charge for investments in holding companies. The RBC charge is 0.225 times the holding company value in excess of the carrying value of indirectly owned insurance affiliates calculated in $R_0$. In our example, this would be 0.225 times $22 million, where $22 million is derived as in Table 84.

TABLE 84

| Reporting Entity Insurance Company (REIC) | Carrying value |
|---|---|
| HC Company | 55,000,000 |
| | |
| U.S. Sub Life Insurance Company | 5,500,000 |
| U.S. Sub Property/Casualty Insurance Company | 16,500,000 |
| UK Sub Property/Casualty Insurance Company | 11,000,000 |
| Subtotal, indirectly owned insurance subsidiaries | 33,000,000 |
| | |
| Holding company minus indirectly owned subs | 22,000,000 |

*Upstream Affiliates (i.e., Parent Company)*

For bond investments in a parent company, the RBC charge is 0.225 times the carrying value of the common and preferred stock of the parent, regardless of whether the parent is subject to RBC.

*Property & Casualty Insurance Affiliates*

For P/C insurance affiliates that are not subject to RBC, including title insurers, monoline financial guaranty insurers, and monoline mortgage guaranty insurers, the RBC charge is 0.225 times the book/adjusted carrying value of the common and preferred stock.

*Life Insurance Affiliates*

For Life insurance affiliates that are not subject to RBC, the RBC charge is 0.225 times the book/adjusted carrying value of the common stock and preferred stock.

*Health Insurance Affiliates*

For Health insurance affiliates that are not subject to RBC, the RBC charge is 0.225 times the book/adjusted carrying value of the common stock and preferred stock.

*Other Affiliates*

Non-insurance and insurance affiliates not included elsewhere in this chapter are classified as Other Affiliates. The RBC charge for investments in Other Affiliate is 0.225 times the carrying value of the common and preferred stock.

*Unaffiliated Stocks*

The RBC charge for unaffiliated preferred stocks and hybrid investments is equal to the book/adjusted carrying value of the asset multiplied by a factor, where the factors vary based on the NAIC class. The classes for preferred stocks and hybrid securities are the same as those for bonds, as are the RBC factors, with the exception that there are no federal government guaranteed preferred stocks:

TABLE 85

| NAIC class for preferred stocks and hybrid securities | RBC factor |
|---|---|
| Class 01 — Highest credit quality | 0.003 |
| Class 02 — High credit quality | 0.010 |
| Class 03 — Medium credit quality | 0.020 |
| Class 04 — Low credit quality | 0.045 |
| Class 05 — Lowest credit quality | 0.100 |
| Class 06 — In or near default | 0.300 |

The RBC charge for unaffiliated common stocks is computed separately for non-government money market funds and other admitted unaffiliated common stocks. The computation applies a specific factor to the book/adjusted carrying value. The RBC factor for non-government money market funds of 0.003 is equal to that for cash because these investments are considered to be of the same risk level. The factor applied to other common stocks is 0.150.

*Real Estate, Schedule BA and Miscellaneous Assets*

In general, the RBC charge for real estate investments, other long-term invested assets (as per Schedule BA) and miscellaneous assets are computed as a factor times the book/adjusted carrying value for those assets. The RBC charges for each investment are as follows:

- 0.100 times the book value of real estate (Annual Statement Schedule A assets)
    - According to the NAIC RBC Instructions, encumbrances have been included in the real estate base since the value of the property subject to loss would include encumbrances[154]
- 0.200 times the book value for other long-term invested assets (Annual Statement Schedule BA assets) other than collateral loans
- 0.050 times the book value for aggregate write-ins for invested assets and derivatives
- 0.025 times the book value for receivables for securities

*$R_2$ for Fictitious*

Table 86 shows the calculation of $R_2$ for Fictitious Insurance Company. As with the calculation of $R_1$ for Fictitious, we had to make several assumptions because only excerpts of Fictitious' Annual Statement are included with this publication. One such assumption that is relevant to the calculation of $R_2$ is the distribution of stock by RBC class.

[154] NAIC, *RBC Property & Casualty 2018 Forecasting & Instructions,* page 8.

TABLE 86[155]

| ***$R_2$ Charge for Fictitious Insurance Company*** **NAIC Risk-Based Capital 2018** | | | |
|---|---|---|---|
| Total $R_O$ Charge — Subsidiary Insurance Companies and Misc. Other Amounts | | | 0 |
| Total $R_1$ Charge — Fixed Income Asset Risk | | | 553,398 |
| **$R_2$ Calculation — Equity Asset Risk** | **Amount Held** | **Charge Factor** | **RBC Charge** |
| **Affiliated Investments** | | | |
| Non-Insurance Affiliated Common Stock | 0 | 0.2250 | 0 |
| **Unaffiliated Preferred Stock** | | | |
| Class 01 Unaffiliated Preferred Stock | 10,880 | 0.0030 | 33 |
| Class 02 Unaffiliated Preferred Stock | 0 | 0.0100 | 0 |
| Class 03 Unaffiliated Preferred Stock | 0 | 0.0200 | 0 |
| Class 04 Unaffiliated Preferred Stock | 23,120 | 0.0450 | 1,040 |
| Class 05 Unaffiliated Preferred Stock | 0 | 0.1000 | 0 |
| Class 06 Unaffiliated Preferred Stock | 0 | 0.3000 | 0 |
| **Unaffiliated Common Stock** | | | |
| Non-government money market funds | 0 | 0.0030 | 0 |
| Other admitted unaffiliated common stock | 19,340,000 | 0.1500 | 2,901,000 |
| **Other Long-Term Assets** | | | |
| Real Estate | 3,845,000 | 0.1000 | 384,500 |
| Schedule BA Assets Excluding Collateral Loans | 4,628,000 | 0.2000 | 925,600 |
| **Miscellaneous Assets** | | | |
| Aggregate W/I for Invested Assets | (5,000) | 0.0500 | 0 |
| All Other Invested Assets | 79,000 | 0.0500 | 3,950 |
| Receivables for Securities | 0 | 0.0250 | 0 |
| Asset concentration RBC | 87,825,000 | 0.0010 | 87,825 |
| **Total $R_2$ Charge — Equity Assets Risk** | | | **4,303,948** |

THE RBC CHARGE FOR CREDIT RISK ($R_3$)

Credit risk reflects counterparty (the entity owing the insurance company money) credit exposure for receivables, including those relating to reinsurance. It contemplates the risk that the counterparty will default (or not pay in whole or in part) and the risk associated with estimating the amounts recorded for counterparty receivables.

$R_3$ is the charge for credit risk associated with the following:

1. Reinsurance recoverable (reinsurance RBC)

[155] Note the RBC charge is greater than or equal to 0 as in the case of Aggregate Write-ins (W/I) for Invested Assets in Table 86.

2. Non-invested assets
3. Health credit risk

The largest component of $R_3$ in the industry is the risk associated with uncollectible reinsurance (due both to reinsurers being unable and unwilling to pay). While there is a charge for health credit risk, it is historically zero for most property/casualty companies across the industry.

*Reinsurance recoverables*

The $R_3$ charge for reinsurance recoverables reflects the risk that reinsurers cannot or will not pay amounts the reporting entity expects to receive under the terms of its reinsurance contracts.

Over the years there has been considerable focus in the property/casualty industry on reinsurance. For one, uncollectible reinsurance was deemed partly to blame for the failure of Mission Insurance Company and Transit Casualty Company,[156] which helped set RBC in motion for the property/casualty industry. Furthermore, throughout the years, reinsurance has been used in certain situations inappropriately to enhance a company's financial position or hide poor financial results.[157]

From its inception, the RBC formula applied a simple 10% loading to all eligible reinsurance recoverables. Despite the relatively low impact that $R_3$ has on the industry as a whole, the charge has been subject to criticism from insurance carriers, who have argued that the charge does not differentiate between high and low rated reinsurers, or give credit for those recoverables that are backed by collateral.

From 2018,[158] a new formula was introduced to address these concerns. This new formula is performed at the transaction level and those results are then summed to determine the charge. It applies differentiated risk charges to each reinsurer counterparty based on their credit quality, as indicated by a rating from an approved rating agency, as well as whether or not the recoverables are collateralized.

The charge is calculated within columns 28 through 36 of Schedule F, Part 3, of the Annual Statement. Details of this part of the calculation are described in Chapter 14 covering Schedule F (section titled *"Credit Risk on Ceded Reinsurance (columns 21 through 36)"*). The RBC formula uses the total row of the results shown in columns 35 and 36 as inputs to the $R_3$ risk charge.

[156] U.S. House of Representatives Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce, Failed Promises-Insurance Company Insolvencies, 101 Cong., 2rid sess., February 1990. Washington, D.C.: GPO, 1993.
[157] Feldblum, S., "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements," PCAS LXXXIII, 1996, pages 317-319.
[158] Earlier versions of the new formula for the reinsurance recoverables component of $R_3$ were included for informational purposes only in the RBC filings in 2016 and 2017 while it was under development.

Overall, the implementation of this new formula has reduced the level of RBC for reinsurance recoverables by almost a half across the industry.[159]

The RBC charge for reinsurance recoverable is split 50%/50% between $R_3$ and $R_4$ in circumstances where the reserve RBC charge (see discussion below) exceeds the sum of the credit risk RBC charge for non-invested assets plus one-half of the RBC charge for reinsurance recoverables. Otherwise, the full amount of the reinsurance recoverable RBC charge is included in $R_3$. The concept of moving half of the reinsurance recoverable RBC amount to $R_4$ is to recognize there is some dependency between deterioration in reserves and an increase in exposure to reinsurance credit risk. The limitation on splitting the charge based on the size of the reserve RBC charge is put in place so the insurance company cannot diversify away a portion of its credit risk in situations where the company has limited net reserves.

*Non-invested assets*

$R_3$ includes the charge for risk associated with credit exposure resulting from the following non-invested assets listed on the balance sheet:

1. Investment income due and accrued
2. Guaranty funds receivable or on deposit
3. Recoverable from parent, subsidiaries and affiliates
4. Amounts receivable relating to uninsured Accident and Health plans
5. Aggregate write-in for other than invested assets

The RBC charge for these assets is the net admitted value included in column 3 of the asset side of the balance sheet (page 2 of the Annual Statement), each multiplied by a factor of 0.050, with the exception of investment income due and accrued, which receives a factor of 0.010. The factor for investment income due and accrued is equal to the RBC factor applied to unaffiliated class 02 bonds because most of the investment income due and accrued comes from bonds, which are typically the largest holding for a property/casualty insurance company. The receivable assets are generally short-term balances generated in the normal course of doing business. The capital charges for these assets are lower than other long-term recoverables.

*Health credit risk*

Finally, $R_3$ also includes a charge for health credit risk for those reporting entities writing 5% or more in accident and health premiums in any of the last three years. This charge considers the risk associated with transferring health risks (morbidity and mortality) to health care organizations through fixed prepaid amounts (i.e., capitated payments).[160] There is a risk of non-payment in these situations (similar to traditional reinsurance recoverables). Therefore, a charge is applied to reflect the credit risk

[159] NAIC, *Summary: Aggregate P/C RBC Results By Year*, 2018, http://www.naic.org/documents/research_stats_rbc_results_pc.pdf

[160] Health care organizations include health maintenance organizations or managed care organizations.

associated with the portion of capitated payments over and above the security held by the reporting entity for these organizations.

Given that this charge is generally zero for most companies in the property/casualty industry, we will not go into details of the calculation of this charge.

*$R_3$ for Fictitious*

Table 87 illustrates the calculation of $R_3$ for Fictitious.

TABLE 87

| ***$R_3$ Charge for Fictitious Insurance Company NAIC Risk-Based Capital 2018*** | | | |
|---|---|---|---|
| Total $R_O$ Charge — Subsidiary Insurance Companies and Misc. Other Amounts | | | 0 |
| Total $R_1$ Charge — Fixed Income Asset Risk | | | 553,398 |
| Total $R_2$ Charge — Equity Asset Risk | | | 4,303,948 |
| **$R_3$ Calculation — Credit-Related Assets** | **Amount Held** | **Charge Factor** | **RBC Charge** |
| Total RBC Requirement for Collateralized RI Recoverables *(Sch F, Part 3, Col 35)* | | | 132,000 |
| Total RBC Requirement for Uncollateralized RI Recoverables *(Sch F, Part 3, Col 36)* | | | 415,000 |
| Investment Income Due & Accrued | 726,000 | 0.010 | 7,260 |
| Guaranty Funds Receivable or on Deposit | 0 | 0.050 | 0 |
| Recoverable from Parent, Subs and Affils | 0 | 0.050 | 0 |
| Amts Receivable relating to Uninsured A&H Plans | 0 | 0.050 | 0 |
| Agg. Write-ins for other than Inv. Assets | 586,000 | 0.050 | 29,300 |
| Health Credit Risk | | | 0 |
| **Total** | | | **583,560** |
| Half of Reinsurance Recoverables Moved to $R_4$ | | | 273,500 |
| **Total $R_3$ Charge — Credit-Related Asset Risk** | | | **310,060** |

THE RBC CHARGE FOR RESERVE RISK ($R_4$)

$R_4$ is very often the largest of the RBC charges for property/casualty insurers. Reserve risk contemplates the risk that a reporting entity's loss and LAE reserves will develop adversely. This charge is calculated separately by line of business using Schedule P data for the last 10 years.

$R_4$ is the charge for reserve risk associated with the following:

1. Unpaid loss and LAE (reserve RBC)
2. Excessive premium growth
3. Reinsurance recoverable (reinsurance RBC)
4. Accident and Health (A&H) claim reserves (health RBC)

Within the following sections we provide a discussion of each of these categories, with considerable focus on the reserve RBC since this represents the dominant component of the $R_4$ charge.

*Reserve RBC*

Reserve RBC is determined by applying a set of factors (called company RBC percent) to the company's net loss and LAE reserves before non-tabular discount. Nominal (undiscounted) reserves are used because consideration for investment income is made by applying the same set of discount factors to all property/casualty insurance companies (called the adjustment for investment income). The use of a common method for considering investment income puts all property/casualty companies on an equivalent basis rather than having differences due to discount rates and payout patterns.

The calculation is performed separately by line of business using the same lines of business as used in Schedule P of the Annual Statement, with the exception that certain lines of business are combined. The occurrence and claims-made categories are combined for other liability and product liability, and reinsurance property and financial lines are combined.

Once the calculation of the base loss and LAE reserve RBC is performed for each line of business, two adjustments are made: one for loss sensitive (e.g., retrospectively rated) contracts and the other for loss concentration. Similar to the asset concentration factor in $R_1$ and $R_2$, the loss concentration factor considers diversification in the RBC calculation. Both adjustments result in reductions to the reserve RBC.

We will discuss each component of the calculation, providing examples where applicable.

<u>Base loss and LAE reserve RBC by line of business</u>

The base loss and LAE reserve RBC by line of business is computed as follows:

*Equation 1:* Base Loss and LAE Reserve RBC

= [[[Company RBC % + 1] * Adjustment for investment income] – 1]
* [Net loss and LAE reserve + Other discounts not in the reserves]

The net loss and LAE reserves used in this calculation are provided in Schedule P, Part 1, column 24, for each line of business. As previously noted, these are gross of non-tabular discount, but net of tabular discount.

Company RBC percentage

The company RBC percentage is the crux of the reserve risk charge. According to the NAIC RBC instructions, "These factors are designed to provide a surplus cushion against adverse reserve development."[161]

For each line of business, the company RBC percentage is determined based on a 50% weighting applied to the straight industry reserve RBC percent and 50% applied to the industry reserve RBC percent adjusted for the company's own experience.

- *Industry reserve RBC percent*

  The industry reserve RBC percent is a set of factors provided by the NAIC and is the same for all property/casualty insurance companies. There is one factor for each Schedule P line of business. According to the NAIC RBC instructions, these percentages "are based on detailed analysis of historical reserve development patterns found in Parts 2 and 3 of Schedule P for each major line of business."[162] They have been determined in the past by computing the ratio of net incurred loss and defense and cost containment (DCC) development during a particular period from Schedule P, Part 2, to the net loss and DCC reserves as of the earlier period (calculated by subtracting the figures in Schedule P, Part 3 from those in Part 2). The industry percent factor is selected based on the average for all companies within the property/casualty insurance industry, by line of business.

  The industry RBC percent factors are not always updated annually, but rather on an as-needed basis. In fact, the factors in the original RBC model remained for well over 10 years. The only interim change was made to reflect the change in the format of Schedule P, such as when medical malpractice was split into its claims made and occurrence components.

  The NAIC developed the original factors in 1993 based on an actuarial analysis using data evaluated as of 1991 and prior.[163] This analysis computed the aforementioned ratios of incurred loss and DCC to prior period reserves over each evaluation period provided in Schedule P, Parts 2 and 3 of the 1991 Annual Statement. Nine ratios were computed, the first of which provided development on accident years 1982 and prior over the period December 31, 1982 through December 31, 1991, as a ratio to loss and DCC reserves as of December 31, 1982. The remaining eight ratios were computed measuring development to December 31, 1991, for periods beginning December 31, 1983 through December 31, 1990. The nine ratios were calculated for each line of business by company. An average was computed over all companies for each evaluation period. The industry RBC percent factor for each line of business was set equal to the

[161] NAIC, *RBC Property & Casualty 2018 Forecasting & Instructions,* page 21.
[162] Ibid.
[163] American Academy of Actuaries, "An Update to P/C Risk-Based Capital Underwriting Factors: September 2007 Report to the National Association of Insurance Commissioners P/C Risk-Based Capital Working Group," page 3.

largest ratio over all of the evaluation dates. This is commonly referred to as the "worst-case year" ratio. The belief is that development of this magnitude could occur in the future because it occurred in the past.[164]

The original factors remained until 2008, when the NAIC adopted changes recommended by the American Academy of Actuaries P/C Risk-Based Capital Committee (Committee) in a report titled *An Update to P/C Risk-Based Capital Underwriting Factors: September 2007 Report to the National Association of Insurance Commissioners P/C Risk-Based Capital Working Group*. In this study, the Committee recognized that the insurance industry had been through many changes since the original factors were developed, namely changes in the underwriting cycle resulting in shifts in reserve redundancies/deficiencies. Furthermore, despite the formulaic approach of the worst-case year, the Committee found that the original factors could not be easily replicated and varied considerably relative to expectations as to the level of adverse development inherent in a particular line of business. The Committee therefore recommended developing a revised approach that would meet the following criteria:

1. Simple to apply and understand;
2. Responsive to actual history and underlying risk;
3. Easily reproducible by future practitioners;
4. Statistically relevant;
5. Resulting in indications that could be adopted without disruptive swings in required capital for regulated companies."[165]

The revised approach differed from the original approach in four significant ways:

1. The historical data was filtered and screened to remove companies with insufficient or unusual data points. Examples include companies with less than 10 years of experience and/or companies with negative paid, reserve and/or incurred loss and DCC in any one accident year.
2. Rather than selecting the ratio from the worst-case year over the average of all companies, the 87.5 percentile of all data points was used. "The 87.5 percentile was selected because it represents a conservative view of the risk in each line but is also broadly consistent with the existing factors."[166]
3. A floor was set such that the indicated industry reserve RBC percent factor resulted in a minimum charge of 5% after adjustment for investment income.

[164] Feldblum, S., "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements," PCAS LXXXIII, 1996, pages 327-329.
[165] American Academy of Actuaries, *An Update to P/C Risk-Based Capital Underwriting Factors: September 2007 Report to the National Association of Insurance Commissioners P/C Risk-Based Capital Working Group*, pages 2 and 3.
[166] Ibid, page 6.

4. The indicated industry reserve RBC percent factors were capped to limit the change in the base loss and LAE reserve RBC. The Committee recommended a cap of 35%.[167]

For example, the indicated industry reserve RBC factor for private passenger automobile liability that was produced using the revised methodology before capping was 0.128, and the change in the investment income adjustment factor was 0.927. Using Equation 1 (assuming a net loss and LAE reserve balance of $1.00), the implied base loss and LAE reserve RBC is 0.046. As displayed below, this represented a change of -70.5% from the original industry reserve RBC factor of 0.254 with adjustment for investment income of 0.921:

Indicated base loss and LAE reserve RBC based on 2007 methodology before capping:

= [[[0.128 + 1] * 0.927] – 1] *$1.00
= 0.046

Original base loss and LAE reserve RBC:
= [[[0.254 + 1] * 0.921] – 1] *$1.00
= 0.155

Change in base loss and LAE reserve RBC from original to revised (2007) methodology:

= 0.046 / 0.155 - 1
= -70.5%

Capped at 35%, the revised methodology produced an industry reserve RBC percent factor of 0.187, which was calculated as follows:

= [[[(-0.350 +1) * 0.155] +1] / 0.927] - 1
= 0.187

To summarize, the industry RBC reserve factor indicated from the revised 2007 methodology was 0.128 before capping and 0.187 after the 35% cap. The 35% cap reduced the impact of the change in methodology from the original factor of 0.254.[168]

The NAIC adopted the factors in 2008 using the revised methodology and indications of the September 2007 report, however with a cap at 15% instead of 35%. The revised factors were applied to RBC calculations for the 2008 reporting year. To continue with the previous example, capping at 15% resulted in an industry RBC reserve percent factor of 0.221, which was calculated as follows:

= [[[(-0.150 +1) * 0.155] +1] / 0.927] - 1

[167] Ibid, pages 6 and 7.
[168] Ibid, Appendix II, Exhibit I – III.

= 0.221[169]

Subsequent changes to the industry reserve RBC percent factors were also made and adopted in 2009 and 2010. The 2009 update applied a 15% cap to the factors adopted in 2008. That is, 2008 factors were substituted in for the "original" factors in the previous calculations, for purposes of capping the impact from the effects of the 2007 revised methodology. This revision was adopted in 2009 and applied to the 2009 reporting year.[170]

Two changes were made in 2010. First, in March 2010, the American Academy of Actuaries P/C Risk-Based Capital Working Group updated the 2007 methodology but with 2008 data. As with the 2007 study, the factors were capped to cause no more than a 15% change to the current factors (2009 updated factors), and the minimum charge was set at 5%.[171] Second, in June 2010, the March 2010 study was updated using a 5% cap instead of 15%.[172] The 2010 study capped at 5% was adopted and applied to the 2010 reporting year.

The 2017 RBC formula had a further update to the industry RBC reserve factors, the first since 2010. This update was based on changes recommended by the American Academy of Actuaries P/C Risk-Based Capital Committee in a report titled *2016 Update to Property and Casualty Risk-Based Capital Underwriting Factors.*[173] This report proposed a new calibration based on data from Annual Statements 1997-2014 and calculates the 87.5 percentile subject to the following filtering:

- **Survivorship** – Include data points where, for a particular company and line of business there is no net earned premium in the latest accident year(s).
- **Line of business size** – Exclude data points where, for a particular line of business, net earned premiums are less than the 15th percentile for that accident year or reserve year.
- **Pooling** – Combine data points from intercompany pool participants into a single pool-wide data point.
- **Minor Lines** – Exclude data points where the net earned premium for the line of business represents a small portion of the company's total net earned premium.

[169] American Academy of Actuaries, *Update to P/C Risk-Based Capital Underwriting Factors Presented to National Association of Insurance Commissioners P/C Risk-Based Capital Working Group*, March 2008.
[170] American Academy of Actuaries, *2009 Update to P/C Risk-Based Capital Underwriting Factors Presented to National Association of Insurance Commissioners' P/C Risk-Based Capital Working Group*, December 2008.
[171] American Academy of Actuaries, *2010 Update to P/C Risk-Based Capital Underwriting Factors Presented to the National Association of Insurance Commissioners' Property Risk-Based Capital Working Group*, March 2010.
[172] Letter from the American Academy of Actuaries P/C Risk-Based Capital Working Group to the National Association of Insurance Commissioners Capital Adequacy (E) Task Force *Re: Risk-Based Capital Underwriting Factors – 2010 Update – Addendum Using 5 Percent Cap*, dated June 22, 2010.
[173] https://www.actuary.org/sites/default/files/files/publications/PC_RBC_UWFactors_10282016.pdf

- **Years of line of business with net earned premium >0** – Exclude data points where, for a particular company and line of business, there is less than five years of net earned premium
- **Maturity** – Remove the least mature data points.
- **Anomalous values** – Exclude data points with anomalous values, i.e., negative loss ratios, negative initial reserves and reserve runoff ratios over/under 500%/-500%.

In 2017, the NAIC's Property and Casualty Risk-Based Capital (E) Working Group updated the industry RBC reserve factors in the 2017 RBC formula to the 10% capped level, representing scenario #1 in the report. The factors were due to be re-evaluated again and expected to reach the fully proposed values in the following four years.

In 2018, the NAIC's Property and Casualty Risk-Based Capital (E) Working Group further revised the factors to be included in the 2019 RBC formula by adopting the 35% capped factors (scenario #3) for commercial insurance, medical professional liability and all other lines, while adopting the uncapped factors (scenario #4) for personal and reinsurance lines.

- *Company "development factor"*

The reporting entity's own loss experience is considered by adjusting the industry reserve RBC percent by the company "development factor" by line of business. This development factor is calculated as the ratio of the sum of incurred loss and DCC from nine prior accident years evaluated as of the current year to the sum of the initial evaluations of those incurred amounts. The current incurred loss and DCC values come from Schedule P, Part 2, column 10, with the initial values coming from the first incurred value shown for each accident year. The initial values lie along the diagonal. This development factor measures how the initial estimates of ultimate loss and DCC have developed based on what the company currently knows. The factor is capped at 400% to limit the impact of anomalous, one-time results.

The reporting entity may not rely on its own experience in determining the company RBC percentage if:

1. Either the initial or current values shown in Schedule P, Part 2, are negative for any year.
2. The current value is zero for any year.
3. The sum of the initial values is zero across all years.

<u>Adjustment for investment income</u>

With the exception of workers' compensation tabular reserves, and instances where a company has explicitly requested and received permission from state regulatory authorities to discount non-tabular reserves, insurance companies are required to record loss and LAE reserves on an undiscounted basis

under statutory accounting. This creates an inherent margin in surplus. For purposes of determining required capital under the RBC calculation, the reserves are adjusted to remove this margin.[174]

Similar to the industry reserve RBC percent, the investment income factors are provided by the NAIC. According to the NAIC RBC instructions, "This discount factor assumes a 5 percent interest rate. For lines of business other than workers' compensation and the excess reinsurance lines, the payment pattern is determined using an IRS type methodology applied to industry-wide Schedule P data by line of business; otherwise, a curve has been fit to the data to estimate the average payout over time. The discount factor for workers' compensation is adjusted to reflect the tabular portion of the reserves that is already discounted."[175] Tabular discounting is typically permitted only on the indemnity portion of workers' compensation reserves and not to the medical component due to the relatively fast payment of medical expenses.

Similar to the industry reserve RBC percent, the investment income adjustment factors were updated in September 2007 from their original values. An approach similar to the original methodology was followed but applied to updated data through 2005.[176]

Other discounts not included in the reserves

The adjustment for investment income is applied to reflect non-tabular discount. It is applied to loss and LAE reserves on a net of reinsurance basis, net of tabular discount, but before any non-tabular discount, as provided in column 24 of Schedule P, Part 1. If for some reason the amounts included in column 24 are net of non-tabular discount, the amount of the non-tabular discount would need to be added back to the reserves before applying the adjustment for investment income.

These amounts are generally equal to zero; the amount of non-tabular discount is included in columns 32 and 33 of Schedule P, Part 1.

Adjustment for loss-sensitive business

Prior to summing the reserve risk charge over all lines of business written by the reporting company, an adjustment is made to reflect loss-sensitive business.

The loss sensitive adjustment provides a discount for business that is written by the insurance company on contracts for which the premium is determined based on the insured's loss experience (i.e., retrospectively rated contracts). The loss experience is shared in whole or in part with the insured. Therefore, the risk of adverse loss development is also shared with the insured. The insurer needs less surplus to survive this risk of adverse loss development than it does if none of the policies were written

[174] Feldblum, S., "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements," PCAS LXXXIII, 1996, page 354.
[175] NAIC, *RBC Property & Casualty 2018 Forecasting & Instructions,* page 21.
[176] American Academy of Actuaries, *An Update to P/C Risk-Based Capital Underwriting Factors: September 2007 Report to the National Association of Insurance Commissioners P/C Risk-Based Capital Working Group*, page 5.

on a loss sensitive basis, thereby resulting in a discount to the company's RBC reserve charge to reflect this reduction in risk. This discount is computed separately by line of business.

The following provides the application of the loss-sensitive adjustment:

*Equation 2:* Loss and LAE RBC after discount
= Equation1 — Loss-sensitive discount
= Base Loss and LAE Reserve RBC — Loss-sensitive discount

Where the loss-sensitive discount
= Loss-sensitive discount factor
* Base loss and LAE RBC (from Equation 1).

The loss-sensitive discount factor is 30% for net loss and expense reserves associated with direct loss-sensitive contracts and 15% for net loss and expense reserves associated with assumed loss-sensitive contracts. The difference stems from the potential offset associated with reinsurance contracts for commissions that are loss sensitive as well. Oftentimes such business is written with sliding scale commissions whereby the commission the ceding company receives from the reinsurer is dependent upon the loss ratio on the business; the lower the loss ratio, the higher the commission paid by the reinsurer to the ceding company, subject of course to specified limits. For example, the reinsurer may receive additional premium from the reinsured as losses emerge but in turn have to pay additional commission due to a reduction in loss ratio. As with direct loss-sensitive contracts, the risk of adverse loss development on assumed contracts is reduced; however, it is not reduced by as much due to the potential offset from ceding commissions.

The portion of net loss and expense reserves attributed to direct and assumed loss-sensitive contracts is found in column 3 of Schedule P, Parts 7A and 7B, respectively.

Adjustment for loss concentration

The loss concentration adjustment is applied to the sum of the RBC reserve charges for all lines of business and reflects diversification across the lines. The theory underlying this discount is that the reserves for each line of business written by an insurance company would not be expected to develop adversely or favorably at the same time, assuming such development is random.

The final net loss and LAE RBC charge is computed as follows:

*Equation 3:* Net loss and LAE RBC
= Total loss and LAE RBC after discount for all RBC lines * 1,000
* Loss concentration factor

Where the loss concentration factor

$$= \frac{\text{Net loss and LAE for the largest line} * 0.300}{\text{Net loss and LAE for all lines combined}} + 0.700$$

The loss concentration factor is determined by taking the percentage of total net loss and LAE reserves for the largest line of business to the total net loss and LAE for all RBC lines combined, multiplying this percentage by 0.300 and then adding the result to 0.700.[177]

Because all adverse loss development may not always be a random fluctuation in losses, such as when the company increases loss reserves to improve its earnings position, adverse development across lines may not be totally independent. This formula recognizes that there may be some interdependence between lines of business.

A monoline writer would not receive any discount, as the calculation would be 1.000 * 0.300 + 0.700, which produces a loss concentration factor of 1.000. However, a company writing 60% of its business in its largest line would receive a discount to its reserve risk charge of 12%, or a loss concentration factor of 0.880 (= 0.600 * 0.300 + 0.700).

Illustration of reserve RBC calculation

The following provides an illustration of the reserve RBC calculation for REIC. Assume REIC writes only four lines of business: homeowners/farmowners (HO/FO), private passenger automobile liability (PPAL), workers' compensation (WC) and other liability (OL). The source of the company's own data is Schedule P, which is provided in thousands of U.S. dollars.

[177] For clarity, largest line is determined based on the Schedule P line of business having the highest amount of net loss and LAE reserves as of the filing date. Note, despite being separate lines of business within Schedule P, claims-made and occurrence business are combined for purposes of this calculation for other liability and product liability.

TABLE 88

| Reporting Entity Insurance Company (REIC) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Given the following data:** | | **HO/FO** | **PPAL** | **WC** | **OL** | **Total All Lines** | ***Source*** |
| (1) | Industry Average Loss & LAE Development Ratio | 0.989 | 1.022 | 0.952 | 0.966 | | *Provided by NAIC* |
| (2) | Company Average Loss & LAE Dvpt Ratio for prior 9 years | 1.070 | 1.100 | 1.125 | 1.150 | | *Company Schedule P, Part 2* |
| (3) | Industry Loss & LAE RBC % | 0.213 | 0.181 | 0.336 | 0.531 | | *Provided by NAIC* |
| (4) | Adjustment for Investment Income | 0.938 | 0.928 | 0.830 | 0.852 | | *Provided by NAIC* |
| (5) | Company Net Loss & LAE Unpaid, gross of non-tabular discount | 10,000 | 8,000 | 17,000 | 12,000 | 47,000 | *Company Schedule P, Part 1* |
| (6) | Other Discount Amount Not Included in Unpaid Loss & LAE | – | – | – | – | – | *Company data* |
| (7) | Portion of Reserves on Retro-Rated Plans: | | | | | | |
| | (a) % Direct Loss Sensitive | 0.0% | 0.0% | 20.0% | 0.0% | | *Company Schedule P, Part 7A, Col 3* |
| | (b) % Assumed Loss Sensitive | 0.0% | 0.0% | 0.0% | 0.0% | | *Company Schedule P, Part 7B, Col 3* |
| **Calculation of Reserve RBC** | | **HO/FO** | **PPAL** | **WC** | **OL** | **Total All Lines** | |
| **Step 1: Base Loss & LAE Reserve RBC** | | | | | | | |
| (8) | Ratio of Company Average Development Ratio to Industry | 1.082 | 1.076 | 1.182 | 1.190 | | *= (2) / (1)* |
| (9) | Company Loss & LAE RBC % | 0.222 | 0.188 | 0.367 | 0.582 | | *= 50% of (3) + 50% of (8)*(3)* |
| (10) | Base Loss & LAE Reserve RBC Charge | 1,460 | 819 | 2,282 | 4,170 | | *={ [ ( (9)+1 ) * (4) ] - 1 } * { (5) + (6) }* |
| **Step 2: Loss & LAE RBC After Discount** | | | | | | | |
| (11) | Loss-sensitive Factor | – | – | 0.060 | – | | *= 30% of (7a) + 15% of (7b)* |
| (12) | Loss-sensitive Discount | – | – | 137 | – | | *= (11) * (10)* |
| (13) | Loss & LAE RBC After Discount | 1,460 | 819 | 2,145 | 4,170 | 8,594 | *= (10) - (12)* |
| **Step 3: Net Loss & LAE RBC * 1,000** | | | | | | | |
| (14) | Distribution of Loss & LAE Reserves by Line | 21% | 17% | 36% | 26% | | *= (5) by line / (5) total* |
| (15) | Loss Concentration Factor | | | | | 0.809 | *= 0.300 * Max of (14) + 0.700* |
| (16) | **Net Loss & LAE RBC * 1,000** | | | | | **6,948,010** | *= (13) * (15) * 1,000* |

As displayed in Table 88, the reserve RBC included in the $R_4$ charge for REIC is $6,948,010. The main driver of the reserve RBC is the company RBC percentage for loss and LAE reserve risk. This percentage is higher than the industry RBC percent in line 3 because REIC's ultimate estimates tend to develop adversely, as evidenced by the ratios of company development to industry development in excess of 1.000 in line 8 above.

Table 89 provides another example of the detailed $R_4$ calculation for the commercial automobile liability (CAL) line of business for Fictitious Insurance Company. This calculation uses the financial statements and Schedule P line detail found in other examples within this publication.

TABLE 89

| ***$R_4$ Charge for Commercial Automobile Liability (CAL)*** <br> ***Fictitious Insurance Company*** <br> ***NAIC Risk-Based Capital 2018*** | |
|---|---|
| **$R_4$ — Reserve Risk** | **CAL** |
| Industry Average Development | 1.060 |
| Company Average Development | 0.901 |
| Company Average Development / Industry Average Development | 0.850 |
| Industry Loss & LAE RBC % | 0.243 |
| Company RBC % | 0.225 |
| Loss & LAE Unpaid | 3,450,000 |
| Adjustment for Investment Income | 0.911 |
| Loss & LAE Reserve RBC Before Discounts | 399,565 |
| Percent Loss-sensitive Direct Loss and Expense Reserves | 0.011 |
| Loss-sensitive Direct Loss and Expense Reserve Discount Factor | 0.300 |
| Loss-sensitive Discount for Loss and Expense Reserves | 1,319 |
| Loss and LAE Reserve RBC | 398,247 |

*Excessive premium growth*

The estimation of unpaid loss and LAE reserves is subject to greater uncertainty for companies that are growing rapidly. The reasons are twofold. First, an insurance company does not have as much insight into new business as it does into risks that are currently on the books. Second, the estimation of unpaid claims is more difficult for a growing company rather than a company in a steady state. Consider a company that decides to grow its writings by 20% over the course of a year. As a company grows throughout the year, the average writings are more heavily skewed toward the second half of the policy year. Without explicit consideration for this shift, traditional actuarial projection techniques will not adequately capture the lag in loss emergence and therefore will understate the reserve need. However, the difficulty is in determining how exactly to consider this shift.

In the RBC calculation, excessive growth is defined as a three-year average growth rate in gross written premiums that is in excess of 10%. A growth rate of 10% is deemed to be a normal annual increase in premium volume. The growth rate for any single year is capped at 40%. The excess percentage (excess of 10%) is called the RBC average growth rate factor.

Average growth rate factor
= Maximum (average gross premium growth over three years, 0.10) – 0.10

For purposes of this calculation, gross written premiums are equal to direct written premiums from line 35 of column 1 of the Underwriting and Investment Exhibit (U&IE), plus assumed premiums from non-affiliates in column 3. To perform this calculation, Part 1 of the U&IE is required for each of the past four years. The calculation is performed using as many years as possible, but no more than four; if the company only has one year of experience, only one year is used. However, if the company is a start-up, a growth rate of 40% is used. If a company has no gross written premium in the current year, it is assumed not to be growing, and a growth rate of zero is used.

This calculation is performed on a group basis, for those companies that are part of a group. Therefore, each member of the group will have the same RBC average growth rate factor. The group basis is used to neither punish nor reward individual legal entities that might be growing due to a realignment of business from one company within the group to another. In this case, the growth is not attributed to new business but rather a transfer or risks from one company to the other.

In addition, business acquired or divested as a "shell" is included in the calculation of the growth rate only to the extent that the liabilities are retained by the reporting entity. Servicing carriers for assigned risk pools can also exclude the written premiums associated with the involuntary pool, as the insurer has little or no control over the assignment of such risk.

The RBC average growth rate factor is multiplied by 0.450 of the net loss and LAE reserves as per the total line in Schedule P, Part 1, Summary, column 24.

Excessive premium growth charge for loss and LAE reserves =

RBC average growth rate factor * 0.450 * net loss and LAE reserves

The 0.450 has remained unchanged since the original RBC formula for property/casualty insurers was implemented. It was determined by a member of the American Academy of Actuaries RBC Task Force (Mr. Allan Kaufman) after studying the average development in net loss and LAE reserves experienced by companies that experienced growth in excess of 10%, relative to development observed by the remainder of the industry.[178] The 0.450 is already adjusted for discount using a factor of 0.900, which was what Kaufman approximated to be the average discount factor for all lines of business.[179]

*Reinsurance RBC*

Recall from our discussion of the $R_3$ charge that reinsurance RBC represents the minimum amount of capital included in the RBC formula that would be needed to survive the risk of reinsurer default.

The reinsurance RBC within $R_4$ is equal to the other half of the reinsurance recoverable amount computed in $R_3$ unless the reserve RBC is less than the RBC for non-invested assets plus one-half of the RBC for reinsurance recoverables. If this is the case, the entire reinsurance RBC charge is included in $R_3$ and the reinsurance RBC within $R_4$ is zero. The reserve RBC limitation was put in place so the insurance company cannot diversify away a portion of its credit risk in situations where the company has limited net reserves.

*Health RBC*

[178] Feldblum, S., "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements," PCAS LXXXIII, 1996, page 354.
[179] Ibid.

In addition to the charge for property/casualty lines of business, a separate health RBC calculation is required for those property/casualty insurers that have written 5% or more in accident and health premiums in any of the past three years. We will not go into the details of this formula but note that the health RBC calculation is based on the RBC formula for life insurance.

*$R_4$ for Fictitious*

Table 90 provides the $R_4$ calculation for Fictitious.

TABLE 90

***$R_4$ Charge for Fictitious Insurance Company***
***NAIC Risk-Based Capital 2018***

| | | | | | |
|---|---|---|---|---|---|
| Total $R_0$ Charge — Subsidiary Insurance Companies and Misc. Other Amounts | | | | | 0 |
| Total $R_1$ Charge — Fixed Income Asset Risk | | | | | 553,398 |
| Total $R_2$ Charge — Equity Asset Risk | | | | | 4,303,948 |
| Total $R_3$ Charge — Credit-Related Asset Risk | | | | | 310,060 |
| **$R_4$ Calculation — Underwriting Risk — Reserves** | **Amount Held** | **Charge Factor** | **Initial RBC Charge** | **Loss-sensitive Discount[180]** | **Final RBC Charge** |
| **Property/Casualty business** | | | | | |
| Loss and LAE reserves — HO/FO | 1,455,000 | 0.1237 | 179,984 | 0 | 179,984 |
| Loss and LAE reserves — PPAL | 2,482,000 | 0.1136 | 281,955 | 0 | 281,955 |
| Loss and LAE reserves — CAL | 3,450,000 | 0.1158 | 399,565 | 1,319 | 398,247 |
| Loss and LAE reserves — WC | 15,946,000 | 0.1122 | 1,789,141 | 66,019 | 1,723,122 |
| Loss and LAE reserves — CMP | 4,782,000 | 0.3087 | 1,476,203 | 0 | 1,476,203 |
| Loss and LAE reserves — Med Mal Occurrence | 0 | 0.0000 | 0 | 0 | 0 |
| Loss and LAE reserves — Med Mal CM | 0 | 0.0000 | 0 | 0 | 0 |
| Loss and LAE reserves — Spec Liab | 0 | 0.0000 | 0 | 0 | 0 |
| Loss and LAE reserves — OL | 20,691,000 | 0.3095 | 6,403,865 | 9,607 | 6,394,258 |
| Loss and LAE reserves — Spec Prop | 1,624,000 | 0.1740 | 282,576 | 0 | 282,576 |
| Loss and LAE reserves — APD | 310,000 | 0.0873 | 27,063 | 0 | 27,063 |
| Loss and LAE reserves — F&S | 817,000 | 0.2530 | 206,701 | 0 | 206,701 |
| Loss and LAE reserves — Other | 0 | 0.0000 | 0 | 0 | 0 |
| Loss and LAE reserves — Products Liability | 0 | 0.0000 | 0 | 0 | 0 |
| Loss and LAE reserves — All Other | | | | | |
| Total | 51,557,000 | | 11,047,053 | 76,945 | 10,970,109 |
| Company loss concentration factor | | 0.8204 | | | |
| Loss reserve RBC after loss concentration | | | | | 8,999,842 |
| Current year growth | | 0.0195 | | | |
| 1st prior year growth | | -0.0486 | | | |
| 2nd prior year growth | | -0.0550 | | | |
| Selected Average Growth | | 0.0000 | | | |
| RBC average growth rate | | 0.0000 | | | |
| Excessive growth charge on loss and LAE reserves | 51,557,000 | 0.0000 | | | 0 |
| **Half of Reinsurance RBC** | | | | | 273,500 |
| **Total $R_4$ Charge — Underwriting Risk — Reserves** | | | | | **9,273,342** |

[180] We have assumed that the percentage of Fictitious' net loss and expense reserves that emanates from loss-sensitive contracts written on a direct basis is: 1.10% for commercial automobile liability, 12.3% for workers' compensation, 0.5% for other liability, and 0% for all other lines and for loss-sensitive contracts written on an assumed basis.

THE RBC CHARGE FOR WRITTEN PREMIUM RISK ($R_5$)

The $R_5$ charge considers underwriting risk associated with the following:

1. Net written premium (written premium RBC)
2. Excessive premium growth
3. Health premium (health premium RBC)
4. Health stabilization

For a typical company, almost all of the $R_5$ charge will come from the written premium RBC component.

The following provides a brief discussion of each of the first two categories of the $R_5$ risk charge. As previously noted in the discussion on $R_4$, we will not go into details for health insurance categories because the charges for health premium RBC and health stabilization are generally immaterial to the property/casualty industry.

*Written premium RBC*

Written premium risk contemplates the risk that future business written by the company will be unprofitable. Ideally, the charge for this risk should be based on business written in the following year, but since that is an unknown quantity, business written during the current year is used as a proxy. Similar to the reserve RBC, the written premium RBC is computed by applying a set of factors, varying by line of business, to the net of reinsurance premiums written by the company during the current year. The calculation is done on the same lines of business as the reserve RBC with a different set of factors used in the calculation.

As with the reserve RBC, once the calculation of the base net written premium RBC is calculated for each line of business, two reductions are made: one for loss-sensitive business and the other for premium concentration (as opposed to loss concentration in $R_4$). Premium concentration reflects diversification in writing business across different lines of business.

Because the mechanics generally follow those used in the reserve RBC charge, we will only discuss differences in the calculation for written premium RBC.

<u>Base net written premium RBC by line of business</u>

The base net written premium RBC by line of business is computed as follows:

Equation 4: Base net written premium RBC
= Net written premium for the current calendar year
* [ [Company RBC loss and LAE ratio * Adjustment for investment income] + Underwriting expense ratio - 1.000 ]

The net written premiums for each line of business are provided in column 6 of Part 1B of the U&IE within the Annual Statement. Aggregate write-ins for other lines of business are included within the other liability line of business.

Company RBC loss and LAE ratio

Similar to how the company RBC percentage is the key driver in the reserve RBC calculation, the company RBC loss and LAE ratio forms the crux of the written premium risk charge. For each line of business, the company RBC loss and LAE ratio is determined based on a 50% weighting applied to the straight industry RBC loss and LAE ratio and 50% applied to the industry RBC loss and LAE ratio adjusted for the company's own experience. The industry RBC loss and LAE ratio is given by the NAIC and is the same for all property/casualty insurance companies.

As with the industry reserve RBC percent, the industry RBC loss and LAE ratios did not change from their original value until 2008, when the NAIC adopted changes that were recommended by the American Academy of Actuaries P/C Risk-Based Capital Committee.[181] The original industry RBC loss and LAE ratios were based on the "worst-case" accident year ratio by line of business that resulted from taking a simple average over all companies. Company loss and LAE ratios by accident year were taken from what is currently column 31 of Schedule P, Part 1. The revised methodology recommended by the Committee instead uses the 87.5 percentile of all data points. Consistent with the industry reserve RBC percent factor, a floor was set such that the indicated industry RBC loss and LAE ratio resulted in a minimum charge of 5% after adjustment for investment income. In addition, the indicated industry RBC loss and LAE ratios were capped to limit the change in the base loss and LAE reserve RBC. The data was also filtered and screened to remove anomalous values (e.g., companies having less than an average of $500,000 in earned premium or a loss ratio of 0% for any one year). Further, loss ratios were capped at 300%.[182]

As discussed in the reserve RBC section above, the 2017 RBC formula saw another update to the industry RBC loss and LAE ratio factors, the first since 2010. This update was based on changes recommended by the American Academy of Actuaries P/C Risk-Based Capital Committee in a report titled *2016 update to Property and Casualty Risk-Based Capital Underwriting Factors.*[183] The recommendations from this study are the same for written premium RBC as those discussed above for reserve RBC. As with the industry RBC reserve factors, the NAIC adopted the industry RBC loss and LAE ratio factors capped at 10% in the 2017 formula, with further revisions to the 2019 formula to use the

[181] Note, however, changes were made to reflect structural changes to Schedule P over the time period, such as the separation of medical malpractice into its occurrence and claims-made components.
[182] American Academy of Actuaries, *An Update to P/C Risk-Based Capital Underwriting Factors: September 2007 Report to the National Association of Insurance Commissioners P/C Risk-Based Capital Working Group*, pages 2 and 5.
[183] https://www.actuary.org/sites/default/files/files/publications/PC_RBC_UWFactors_10282016.pdf

factors capped at 35% for all lines of business other than personal and reinsurance lines which are uncapped.

The reporting entity's own experience is considered by adjusting the industry loss and LAE ratios by the ratio of the company average loss and LAE ratio to the industry average loss and LAE ratio. The company average loss and LAE ratio is a straight average over the past 10 accident years of the net loss and LAE ratios provided in Schedule P, Part 1, column 31. Loss and LAE ratios for any accident year in excess of 300% are capped at that value in consideration of anomalous, one-time results.

Note that the reporting entity may not rely on its own experience in determining the company RBC loss and LAE ratio if:

1. The loss and LAE ratio for any accident year is zero or negative.
2. The net earned premium for any accident year is zero or negative.
3. More than two years' net earned premiums are less than 20% of the average over all years for each line (otherwise the company must exclude the one or two specific years that fail and take a straight average from the remaining years).

Adjustment for investment income

The investment income factors are provided by the NAIC and calculated using the same assumptions as in the reserve RBC, with the exception that discounted years differ because written premium is discounted as opposed to reserves.

Underwriting expense ratio

This is the company's own underwriting expense ratio for the current year capped at 400%, with a floor of zero. It is equal to the ratio of other underwriting expenses incurred in the current year per line 4 of the income statement, divided by total net written premium for the current year from Part 1B, column 6 of the U&IE.

Underwriting expense ratio =
Other underwriting expenses /
Net written premium

Adjustment for loss-sensitive business

Prior to summing the written premium RBC over all lines of business written by the reporting company, an adjustment is made to reflect loss-sensitive business. The following provides the application of the loss-sensitive adjustment:

*Equation 5:* Net written premium RBC after discount
= Equation 4
- Loss-sensitive discount

= Base net written premium RBC
- Loss-sensitive discount.

Similar to the reserve RBC, a 30% discount is applied to the portion of the net written premium RBC charge that is attributed to direct loss-sensitive contracts, and a 15% discount is applied to the base net written premium RBC charge for assumed contracts. The portion of net written premium attributed to direct and assumed loss sensitive contracts is found in column 6 of Schedule P, Parts 7A and 7B, respectively.

Adjustment for premium concentration

The final written premium RBC charge is computed as follows:

*Equation 6*: Net written premium RBC charge
= Equation 5
* Premium concentration factor
= Total net written premium RBC after discount
* Premium concentration factor

The premium concentration factor is determined by taking the percentage of total net written premiums that the largest line of business represents, multiplying this percentage by 0.300 and then adding the result to 0.700. As with the loss concentration factor, a monoline writer would not receive any discount, as the calculation would be 1.000 * 0.300 + 0.700, which produces a premium concentration factor of 1.000. However, a company writing 60% of its business in its largest line would receive a discount to its net written premium RBC charge of 12%, or a premium concentration factor of 0.880 (= 0.600 * 0.300 + 0.700).

Illustration of written premium RBC calculation

Table 91 shows the written premium RBC calculation for REIC used in our illustration of Reserve RBC. The source of the company's net written premium data is Part 1B of the U&IE, which is provided in U.S. dollars.

TABLE 91

| Reporting Entity Insurance Company (REIC) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Given the following data:** | | **HO/FO** | **PPAL** | **WC** | **OL** | **Total All Lines** | **Source** |
| (1) | Industry Average Loss & LAE Ratio | 0.687 | 0.806 | 0.744 | 0.633 | | *Provided by NAIC* |
| (2) | Company Average Loss & LAE Ratio for past 10 years | 0.634 | 0.724 | 0.811 | 0.975 | | *Company Schedule P, Part 1* |
| (3) | Industry Loss & LAE Ratio | 0.927 | 0.969 | 1.044 | 1.027 | | *Provided by NAIC* |
| (4) | Adjustment for Investment Income | 0.954 | 0.925 | 0.839 | 0.816 | | *Provided by NAIC* |
| (5) | Company Current Year Net Written Premium | 8,500,000 | 7,000,000 | 6,200,000 | 5,300,000 | 27,000,000 | *Company U/W & Inv Ex, Part 1B, Col 6* |
| (6) | Company Underwriting Expense Ratio | 0.271 | 0.271 | 0.271 | 0.271 | | *Company Inc Stmt Line 4 divided by U/W & Inv Ex, Part 1B, Col 6* |
| (7) | Portion of WP on Retro-Rated Plans: | | | | | | |
| | (a) % Direct Loss Sensitive | 0.0% | 0.0% | 13.0% | 0.0% | | *Company Schedule P, Part 7A, Col 6* |
| | (b) % Assumed Loss Sensitive | 0.0% | 0.0% | 0.0% | 0.0% | | *Company Schedule P, Part 7B, Col 6* |
| **Calculation of Written Premium RBC:** | | **HO/FO** | **PPAL** | **WC** | **OL** | **Total All Lines** | |
| **Step 1: Base Written Premium RBC** | | | | | | | |
| (8) | Ratio of Company Average Loss & LAE Ratio to Industry | 0.923 | 0.898 | 1.090 | 1.540 | | *= (2) / (1)* |
| (9) | Company Loss & LAE Ratio | 0.891 | 0.920 | 1.091 | 1.304 | | *= 50% of (3) + 50% of (8)*(3)* |
| (10) | Base Loss & LAE WP RBC Charge | 1,030,584 | 852,112 | 1,155,406 | 1,777,725 | | *= (5) * { [ (9) * (4) ] + (6) - 1 }* |
| **Step 2: Net Written Premium RBC After Discount** | | | | | | | |
| (11) | Loss-sensitive Factor | – | – | 0.039 | – | | *= 30% of (7a) + 15% of (7b)* |
| (12) | Loss-sensitive Discount | – | – | 45,061 | – | | *= (11) * (10)* |
| (13) | Net Written Premium RBC After Discount | 1,030,584 | 852,112 | 1,110,345 | 1,777,725 | 4,770,766 | *= (10) - (12)* |
| **Step 3: Net Written Premium RBC** | | | | | | | |
| (14) | Distribution of WP by Line | 31% | 26% | 23% | 20% | | *= (5) by line / (5) total* |
| (15) | Premium Concentration Factor | | | | | 0.794 | *= 0.300 * Max of (14) +0.700* |
| (16) | **Net Written Premium RBC** | | | | | **3,790,109** | *= (13) * (15)* |

As displayed in Table 91, the written premium RBC that is included in the $R_5$ charge for REIC is $3,790,109. The company average loss and LAE ratio for the past 10 years (line 2) is better than the industry average loss and LAE ratio (line 1) for the personal lines (HO/FO and PPAL) and worse for the commercial lines (WC and OL). Thus, the company loss and LAE ratio in line 9 is lower than the industry ratio in line 3 for the personal lines and higher for the commercial lines. In fact, the ratio is substantially

higher for OL given the poor average loss ratio over the past 10 years, which is causing a higher overall written premium RBC for OL than the other three lines of business, despite the fact that the premium writings are the lowest for OL.

Table 92 provides another example of the $R_5$ calculation for CAL for Fictitious.

TABLE 92

| ***$R_5$ Charge for Commercial Automobile Liability (CAL)*** <br> ***Fictitious Insurance Company*** <br> ***NAIC Risk-Based Capital 2018*** | |
|---|---|
| **$R_5$ — Written Premium Risk** | |
| Industry Average Loss and Loss Expense Ratio | 0.724 |
| Company Average Loss and Loss Expense Ratio | 0.618 |
| Company Average Loss Ratio/Industry Loss Ratio | 0.854 |
| Industry Loss & LAE Ratio | 1.005 |
| Company RBC Loss & LAE Ratio | 0.931 |
| Company Underwriting Expense Ratio | 0.317 |
| Net Written Premium | 2,250,000 |
| Adjustment for Investment Income | 0.890 |
| Net Written Premium RBC Before Discounts | 328,438 |
| Percent Loss-sensitive Direct NPW | 0.008 |
| Loss-sensitive Direct NPW Discount Factor | 0.300 |
| Loss-sensitive Discount for Direct NPW | 788 |
| Total NPW RBC | 327,649 |

*Excessive premium growth*

The RBC average growth rate factor is calculated the same as that for reserve risk. However, the factor differs in its application. In the case of $R_5$, the excessive premium growth charge is applied to net written premium rather than reserves and multiplied by 0.225, rather than 0.450. The net written premium is obtained from the total line in Part 1B, column 6, of the U&IE. The factor of 0.225 was determined by Kaufman based on a study of the loss ratio for companies experiencing growth in excess of 10% versus all companies in the industry. As with the 0.450 factor, the factor applied to net written premium of 0.225 has been adjusted for discounting by 0.900.

*$R_5$ for Fictitious*

Table 93 provides the $R_5$ portion of the calculation for Fictitious.

TABLE 93

***$R_5$ Charge for Fictitious Insurance Company***

***NAIC Risk-Based Capital 2018***

| | |
|---|---|
| **Fictitious Insurance Company** | |
| Total $R_O$ Charge — Subsidiary Insurance Companies and Misc. Other Amounts | 0 |
| Total $R_1$ Charge — Fixed Income Asset Risk | 553,398 |
| Total $R_2$ Charge — Equity Asset Risk | 4,303,948 |
| Total $R_3$ Charge — Credit-Related Asset Risk | 310,060 |
| Total $R_4$ Charge — Underwriting Risk--Reserves | 9,273,342 |

| **$R_5$ Calculation — Underwriting Risk — Net Written Premium** | **Amount Written** | **Charge Factor** | **Initial RBC Charge** | **Loss-sensitive Discount[184]** | **Final RBC Charge** |
|---|---|---|---|---|---|
| **Property/Casualty business** | | | | | |
| Net Written Premium — HO / FO | 4,555,000 | 0.1441 | 656,376 | 0 | 656,376 |
| Net Written Premium — PPAL | 2,804,000 | 0.2115 | 593,046 | 0 | 593,046 |
| Net Written Premium — CAL | 2,250,000 | 0.1460 | 328,438 | 788 | 327,649 |
| Net Written Premium — WC | 4,022,000 | 0.2030 | 816,466 | 13,471 | 802,995 |
| Net Written Premium — CMP | 4,677,000 | 0.1709 | 799,299 | 0 | 799,299 |
| Net Written Premium — Med Mal Occurrence | 0 | 0.0000 | 0 | 0 | 0 |
| Net Written Premium — Med Mal CM | 0 | 0.0000 | 0 | 0 | 0 |
| Net Written Premium — Spec Liab | 0 | 0.0000 | 0 | 0 | 0 |
| Net Written Premium — OL | 3,502,000 | 0.1999 | 700,050 | 630 | 699,420 |
| Net Written Premium — Spec Prop | 2,484,000 | 0.1805 | 448,362 | 0 | 448,362 |
| Net Written Premium — APD | 2,312,000 | 0.1715 | 396,508 | 0 | 396,508 |
| Net Written Premium — F&S | 146,000 | 0.1830 | 26,718 | 0 | 26,718 |
| Net Written Premium — Other | 0 | 0.0000 | 0 | 0 | 0 |
| Net Written Premium — Products Liability | 0 | 0.0000 | 0 | 0 | 0 |
| Net Written Premium — All Other | 0 | 0.0000 | 0 | 0 | 0 |
| Total | 26,752,000 | | 4,765,262 | 14,889 | 4,750,373 |
| Company premium concentration factor | | 0.7524 | | | |
| Written Premium RBC after premium concentration | | | | | 3,574,411 |
| Excessive growth charge on net written premium | 26,752,000 | 0.0000 | | | 0 |
| **Total $R_5$ Charge — Underwriting Risk — Net Written Premium** | | | | | **3,574,411** |

## THE RBC CHARGE FOR CATASTROPHE RISK ($R_{cat}$)

The $R_{cat}$ risk charge considers catastrophe risk associated with earthquakes and hurricanes. This risk applies on a net of reinsurance basis with a corresponding contingent credit risk charge for certain categories of reinsurers.

The insurance company may use the modeled losses from any one of the NAIC-approved commercially available third party vendor catastrophe models, or any combination of losses from two or more of the models, using the insurer's own insured property exposure information as inputs to the model. For the 2018 RBC formula, approved vendor models are available from AIR, EQECAT, RMS, ARA HurLoss Model (hurricane only) and the Florida Public Model (hurricane only). For the 2019 RBC formula, companies will

[184] We have assumed that the percentage of Fictitious' net written premium that emanates from loss-sensitive contracts written on a direct basis is: 0.8% for commercial automobile liability, 5.5% for workers' compensation, 0.3% for other liability, and 0% for all other lines and for loss-sensitive contracts written on an assumed basis.

also be able to use their own internally developed catastrophe model or those that are the result of adjustments made by the insurer to vendor models to represent their own view of catastrophe risk, upon applying for and obtaining written permission by their domestic (where model output is used for a single entity) or lead state (where model output is used for the whole group) insurance regulator.

The company must provide modeled loss scenarios for the worst year in 50, 100, 250 and 500; however, only the worst year in 100 will be used in calculating the catastrophe risk charge. Insurers are expected to use the same exposure data, modeling, and assumptions that they use in their own internal catastrophe risk management process, rather than a prescribed set of modeling assumptions. While it is preferred that the projected modeled losses are reported on an Aggregate Exceedance Probability (AEP) basis, companies are permitted to report on an Occurrence Exceedance Probability (OEP) basis if that is consistent with the company's internal risk management process.

For both earthquakes and hurricanes, a risk charge factor of 1.000 is applied to the net of reinsurance losses (excluding any loss adjustment expenses) at the worst year in 100 level. Additionally, a factor of 0.048 is applied to the modeled losses ceded under any reinsurance contract associated with this level of net loss to capture the contingent credit risk associated with the potential default of reinsurers in this scenario. Recoveries from certain categories of reinsurers are exempt from this charge, namely U.S. affiliates and mandatory pools (whether authorized, unauthorized or certified).

The total $R_{cat}$ catastrophe risk charge is calculated using the "sum of squares" approach, which assumes the two risks are independent, using the following formula:

$$R_{cat} = \sqrt{(Total\ earthquake\ risk)^2 + (Total\ hurricane\ risk)^2}$$

*Exemption Interrogatory*

Insurers may qualify for an exemption from filing either or both of the components of the catastrophe risk charge if they meet certain criteria, upon completion of an interrogatory.

For both earthquake and hurricane exemptions, the company must indicate under which criteria below it is claiming an exemption:

1. The company has not entered into a reinsurance agreement covering earthquake / hurricane exposure with a non-affiliate or a non-U.S. affiliate, and either
    a. The company participates in an inter-company pooling arrangement with 0% participation, leaving no net exposure for earthquake / hurricane risks; or
    b. The company cedes 100% of its earthquake / hurricane exposures to its U.S. affiliate(s), leaving no net exposure for earthquake / hurricane risks
2. The company's ratio of Insured Value – Property to surplus as regards policyholders is less than 50%

3. The company has written Insured Value – Property that includes earthquake / hurricane coverage in the Catastrophe-Prone Areas representing less than 10% of its surplus as regards policyholders

The NAIC RBC Instructions include the following definitions related to the catastrophe risk exemptions[185]:

| | |
|---|---|
| Insured-Value Property | Includes aggregate policy limits for structures and contents for policies written and assumed in the following annual statements lines – Fire, Allied Lines, Earthquake, Farmowners, Homeowners, and Commercial Multi-Peril. |
| Catastrophe-Prone Areas in the U.S.: | |
| - Earthquake risks | Includes any of the following states or commonwealths: Alaska, Hawaii, Washington, Oregon, California, Idaho, Nevada, Utah, Arizona, Montana, Wyoming, Colorado, New Mexico, Puerto Rico, and geographic areas in the following states that are in the New Madrid Seismic Zone – Missouri, Arkansas, Mississippi, Tennessee, Illinois, and Kentucky. |
| - Hurricane risks | Includes Hawaii, District of Columbia, and states and commonwealths bordering on the Atlantic Ocean, and/or Gulf of Mexico including Puerto Rico. |

For the earthquake exemption, if a company qualifies for exemption under criteria 3, the company must provide details about how the "geographic areas in the New Madrid Seismic Zone" were determined, with the following additional questions:

a. What resource was used to define the New Madrid Seismic Zone?
b. Was exposure determined based on zip codes or countries in the zone, was it based on all of the earthquake exposure in the identified states, or was another methodology used? Describe any other methodology used.

*$R_{cat}$ for Fictitious*

Table 94 provides the $R_{cat}$ – Earthquake Catastrophe Risk portion of the calculation for Fictitious.

TABLE 94

| ***$R_{cat}$ Earthquake Charge for Fictitious Insurance Company NAIC Risk-Based Capital 2018*** | |
|---|---|
| $R_{cat}$ - Earthquake Catastrophe Risk | **Modeled Losses (USD in 000s)** |

[185] NAIC, *RBC Property & Casualty 2018 Forecasting & Instructions, page 43*.

| Earthquake | Direct & Assumed | Net | Ceded Amounts Recoverable | Ceded Amounts Recoverable with zero Credit Risk Charge |
|---|---|---|---|---|
| Worst Year in 50 | 70,000 | 50,000 | 20,000 | - |
| Worst Year in 100 | 105,000 | 75,000 | 30,000 | - |
| Worst Year in 250 | 120,000 | 80,000 | 40,000 | - |
| Worst Year in 500 | 135,000 | 80,000 | 55,000 | - |
| Has the company reported above, its modeled earthquake losses using an Occurrence Exceedance Probability (OEP) basis? | | | | Yes |

| | Amount | Factor | RBC Requirement |
|---|---|---|---|
| Net Earthquake Risk | 75,000 | 1.000 | 75,000 |
| Contingent Credit Risk for Earthquake Risk | 30,000 | 0.048 | 1,440 |
| Total Earthquake Catastrophe Risk (AEP basis) | 0 | 1.000 | 0 |
| Total Earthquake Catastrophe Risk (OEP basis) | 76,440 | 1.000 | 76,440 |
| **Total Earthquake Catastrophe Risk** | | | **76,440** |

Table 95 provides the $R_{cat}$ – Hurricane Catastrophe Risk portion of the calculation for Fictitious.

TABLE 95

***$R_{cat}$ Hurricane Charge for Fictitious Insurance Company***
***NAIC Risk-Based Capital 2018***

$R_{cat}$ - Hurricane Catastrophe Risk

| | Modeled Losses (USD in 000s) | | | |
|---|---|---|---|---|
| **Hurricane** | **Direct & Assumed** | **Net** | **Ceded Amounts Recoverable** | **Ceded Amounts Recoverable with zero Credit Risk Charge** |
| Worst Year in 50 | 105,000 | 90,000 | 15,000 | - |
| Worst Year in 100 | 125,000 | 105,000 | 20,000 | - |
| Worst Year in 250 | 160,000 | 115,000 | 45,000 | - |
| Worst Year in 500 | 210,000 | 135,000 | 75,000 | - |

Has the company reported above, its modeled Hurricane losses using an occurrence exceedance probability (OEP) basis? Yes

| | Amount | Factor | RBC Requirement |
|---|---|---|---|
| Net Hurricane Risk | 105,000 | 1.000 | 105,000 |
| Contingent Credit Risk for Hurricane Risk | 20,000 | 0.048 | 960 |
| Total Hurricane Catastrophe Risk (AEP basis) | 0 | 1.000 | 0 |
| Total Hurricane Catastrophe Risk (OEP basis) | 105,960 | 1.000 | 105,960 |
| **Total Hurricane Catastrophe Risk** | | | **105,960** |

Table 96 illustrates the calculation of the total $R_{cat}$ risk charge for Fictitious.

TABLE 96

***$R_{cat}$ Charge for Fictitious Insurance Company***
***NAIC Risk-Based Capital 2018***

| | |
|---|---|
| **Fictitious Insurance Company** | |
| Total $R_O$ Charge — Subsidiary Insurance Companies and Misc. Other Amounts | - |
| Total $R_1$ Charge — Fixed Income Asset Risk | 553,398 |
| Total $R_2$ Charge — Equity Asset Risk | 4,303,948 |
| Total $R_3$ Charge — Credit-Related Asset Risk | 310,060 |
| Total $R_4$ Charge — Underwriting Risk--Reserves | 9,273,342 |
| Total $R_5$ Charge — Underwriting Risk--Net Written Premium | 3,574,411 |
| **$R_{cat}$ Calculation – Catastrophe Risk** | |
| Total Earthquake Catastrophe Risk | 76,440 |
| Total Hurricane Catastrophe Risk | 105,960 |
| **Total $R_{cat}$ Charge – Catastrophe Risk** | **130,654** |

## THE RBC CHARGE FOR BASIC OPERATIONAL RISK

The basic operational risk charge considers the risk of financial loss resulting from operational events that have not already been reflected in existing risk charges. This includes the inadequacy or failure of internal systems, personnel, procedures, or controls, and external events. Additionally, this accounts for legal risk, excluding reputational risk from strategic decisions.

The operational risk charge uses a percentage or "add-on" charge of 3.00%, applied to the Total RBC After Covariance Before Basic Operational Risk. The operational risk charge is further reduced by the sum of offset amounts reported by directly owned life insurance company subsidiaries that prepare and file the Life RBC calculation, adjusted for the percentage of ownership in the directly owned life insurance company subsidiaries (but not to produce a charge that is less than zero).

Table 97 illustrates the final calculation of NAIC RBC, including basic operational risk, for Fictitious.

TABLE 97

| **NAIC Risk-Based Capital 2018<br>Fictitious Insurance Company** | |
|---|---|
| Total $R_0$ Charge — Subsidiary Insurance Companies and Misc. Other Amounts | 0 |
| Total $R_1$ Charge — Asset Risk - Fixed Income | 553,398 |
| Total $R_2$ Charge — Asset Risk - Equity | 4,303,948 |
| Total $R_3$ Charge — Asset Risk - Credit | 310,060 |
| Total $R_4$ Charge — Underwriting Risk--Reserves | 9,561,305 |
| Total $R_5$ Charge — Underwriting Risk--Net Written Premiums | 3,574,411 |
| Total $R_{cat}$ Charge – Catastrophe Risk | 130,654 |
| Total RBC After Covariance Before Basic Operational Risk | 10,849,641 |
| Basic Operational Risk | 325,489 |
| Total RBC After Covariance including Basic Operational Risk | 11,175,131 |

RBC MODEL ACT

Each state's statutes define a minimum amount of capital that a company must have to obtain a license in that state. These amounts vary by state and by lines of business but are usually relatively low, from $1 million to $5 million. These minimum capital amounts do not account for the characteristics and risk level of individual insurance companies.

The purpose of RBC is to help regulators identify insurers that are in financial trouble and that need regulatory attention. Therefore, the RBC requirements attempt to individualize the minimum capital requirement for each insurer. RBC is not a target-level of capital that insurers should hold; rather, it computes a minimum level of capital adequacy that a company must have to operate.

The RBC requirement is a dollar amount calculated from the NAIC RBC formula. The RBC that results from the formula (Total RBC After Covariance including Basic Operational Risk) is compared to a company's Total Adjusted Capital. Total Adjusted Capital is equal to the company's policyholders' surplus from page 3 of the Annual Statement that is reduced by:

1. The amount of non-tabular discount from Schedule P, Part 1, Summary, columns 32 and 33.
2. Tabular discount on medical reserves included in Schedule P, Part 1, Summary, column 24.

Additionally, a property/casualty insurer that owns a life insurance company subsidiary adjusts its surplus for the same amounts as the life subsidiary does for RBC purposes, namely by adding back the asset valuation reserve and 50% of the dividend liability to surplus. All such affiliate amounts are adjusted by the company's percentage of ownership.

The "RBC ratio" is the name used in the insurance industry to describe the ratio of Total Adjusted Capital to Authorized Control Level (ACL). While discretionary, ACL is the point at which the insurance commissioner is authorized to take control over the company under the RBC Model Act. ACL is equal to 50% of the Total RBC After Covariance including Basic Operational Risk.

RBC ratio
= Total Adjusted Capital / ACL
= Total Adjusted Capital / (Total RBC After Covariance including Basic Operational Risk * 0.500)

Regulatory action is permitted when total adjusted capital is within 50 percentage points of the ACL (i.e., when the RBC ratio is 150% or less). This is called the regulatory action level.

Table 98 summarizes the level of regulatory control relative to the percentage of total adjusted capital to both the RBC and ACL benchmarks:

TABLE 98

| Action Level | Total Adjusted capital as a % of ACL Benchmark | Action Required if Inside Range | |
|---|---|---|---|
| | | By State Insurance Department | By Company |
| 1. Company Action Level | 150% to 200% | None initially | Must submit a plan of action within 45 days to the insurance commissioner of the domiciliary state explaining how the Company intends to obtain the needed capital or to reduce its operations or risks to meet the RBC standards. |
| 2. Regulatory Action Level | 100% to 150% | Commissioner has the right to issue an order specifying corrective actions (Corrective Order) to be taken by the insurance company, such as by restricting new business. However, all action by the state insurance department is discretionary; nothing is mandated. | Must submit a plan of action within 45 days to the insurance commissioner of the domiciliary state explaining how the Company intends to obtain the needed capital or to reduce its operations or risks to meet the RBC standards. |
| 3. Authorized Control Level | 70% to 100% | Regulatory action still discretionary, but the insurance commissioner is authorized to take control of the company. | None initially |
| 4. Mandatory Control Level | Below 70% | Insurance commissioner of the domiciliary state must rehabilitate or liquidate the company. | None initially |

As noted earlier, the detailed calculations of a company's risk charges are not available to the public. However, two metrics of RBC are disclosed in the Five-Year Historical Data exhibit of the Annual Statement: Total Adjusted Capital and the ACL. A company's RBC ratio can be calculated by dividing the Total Adjusted Capital by the ACL from the company's Five-Year Historical Data. Table 99 provides the RBC ratios for Fictitious from its 2018 Five-Year Historical Data exhibit.

TABLE 99

| Data from Fictitious Insurance Company 2018 Five-Year Historical Data (USD) | | | | | |
|---|---|---|---|---|---|
| **RBC Analysis** | **2018** | **2017** | **2016** | **2015** | **2014** |
| 28. Total adjusted capital | 31,024,000 | 31,608,000 | 35,793,000 | 32,572,000 | 34,567,000 |
| 29. Authorized control level risk-based capital | 5,588,000 | 6,097,300 | 5,854,000 | 5,685,000 | 6,517,000 |
| Total adjusted capital as a percent of ACL (= line 28 / line 29) | 555% | 518% | 611% | 573% | 530% |

As displayed in Table 99, the company's RBC ratios have been well over 300 points above the Company Action Level, the first action level within the RBC framework, which ranges from 150% to 200% of ACL. Note how the 2018 ACL amount of $5,588,000 is 50% of the Total RBC After Covariance including Basic Operational Risk shown in Table 97.[186]

As shown in the Actuarial Opinion Summary in the Appendix of this publication, Fictitious Insurance Company's range of reasonable reserve estimates is $43 million to $57 million with an actuarial central estimate of $50 million and carried reserves of $51.557 million. If the high end of the range was to materialize, total adjusted capital would decrease by $5.443 million ($57 million - $51.557 million). At $25.581 million, the total adjusted capital would still be well above the company action level of $11.450 million (by $14.131 million). Some Appointed Actuaries look to the impact on capital resulting from a movement in reserves relative to the high end of the actuarial range for purposes of selecting a materiality standard (see Chapter 16. *Statement of Actuarial Opinion*) in their Statement of Actuarial Opinion.

According to the NAIC 2018 RBC instructions, 98.5% of property/casualty insurance companies usually fall within RBC levels that require no regulatory action (i.e., having Total Adjusted Capital in excess of 200% of ACL).[187] However, just because a company's RBC results do not require regulatory attention, it does not necessarily mean that the company is strong financially. RBC is intended to be one of a number of tools used by regulators to evaluate financial solvency and therefore should not be used in isolation.

TREND TEST

Companies with RBC ratios exceeding 200% are not necessarily free from regulatory attention. Companies with an RBC ratio of between 200% and 300% are subject to the trend test. The trend test serves as an early warning to state insurance regulators of companies that may be on a path to reporting an RBC ratio below 200%, thereby triggering the company action level. The trend test looks to see whether companies with an RBC ratio of between 200% and 300% also have a current year combined

[186] Note that the Authorized Control Level RBC of $5,587,565 is rounded to $5,588,000 in Table 12 and Table 99 for simplicity.

[187] NAIC, *RBC Property & Casualty 2018 Forecasting & Instructions,* page 48.

ratio that exceeds 120%. Companies meeting the trend test criteria are required to comply with the company action level requirements despite having an RBC ratio in excess of 200%.

The combined ratio is calculated as the sum of:

(1) Loss and LAE ratio
(2) Dividend ratio
(3) Expense ratio

The loss and LAE ratio is calculated as calendar year net incurred loss and LAE divided by net earned premium from the Statement of Income. The dividend ratio is equal to policyholders' dividends divided by net earned premium from the Statement of Income. The expense ratio is equal to other underwriting expenses incurred plus aggregate write-ins for underwriting deductions from the Statement of Income divided by net written premiums from the Underwriting & Investment Exhibit.

THE FUTURE OF RBC

Since its inception, the RBC model has continued to evolve and this chapter has captured the details of the calculation at a point in time. In particular, over the past decade the RBC formula has had substantial development as a consequence of the comprehensive review of the solvency framework in the U.S. performed as part of the NAIC's Solvency Modernization Initiative. Such changes included the addition of new catastrophe risk and operational risk charges as well as enhancements made to various existing risk categories, such as investments in affiliates and reinsurance credit risk.

In the future the principles behind the RBC calculation are unlikely to change substantially, although we are likely to see continued enhancements to the calculation to reflect evolving practices in the measurement and management of risk.

One initiative currently undertaken by the NAIC is the development of a Group Capital Calculation that will provide regulators with another regulatory tool to understand the level of risk across an entire insurance group, i.e., aggregating across all of its operations, to complement the RBC requirements that are applicable at the legal entity level.

The RBC calculation is likely to also remain a key component of an insurance company's annual Own Risk and Solvency Assessment ("ORSA"). First introduced in 2015, the ORSA is an internal process undertaken by an insurer to assess the adequacy of its risk management and current and prospective solvency positions under normal and severe stress scenarios.

## CHAPTER 20. IRIS RATIOS

OVERVIEW

National Association of Insurance Commissioners (NAIC) Insurance Regulatory Information System (IRIS) has been used since 1972 to help insurance regulators evaluate the financial condition of insurance companies. More than 5,000 companies file their financial statements with the NAIC each year.[188] IRIS is applied to property/casualty, life/accident and health, and fraternal insurance organizations.

IRIS is known by practicing property/casualty actuaries as being a series of 13 tests of financial ratios relative to benchmarks (i.e., ranges of "unusual values"). These are called IRIS ratios. However, the IRIS ratios are only one component of IRIS. IRIS includes other tools and databases of financial information that are used by state insurance regulators to monitor the financial health of insurance companies.

The instructions for computing IRIS ratios are currently included as part of the CAS Exam 6 U.S. Syllabus of Basic Education. As a result, we will not go into details of the calculations here but rather will provide a brief overview of the IRIS ratios. In Appendix I of this publication, we walk through the calculation and purpose of each of the 13 IRIS ratios, provide possible explanations for unusual values, and show the results of the IRIS ratio calculations for Fictitious Insurance Company using data from the 2018 Annual Statement.

IRIS RATIOS

The IRIS ratios are grouped into four categories:

- Overall ratios
- Profitability ratios
- Liquidity ratios
- Reserve ratios

Many of the ratios are computed in terms of policyholder surplus, with the intent of providing an early warning of companies in financial distress. The results of each of these ratios are not reviewed in isolation. When reviewing the results of ratios and investigating unusual values, mitigating or augmenting circumstances brought to light through other ratios and information are considered.

The reserve ratios are probably the most important ratios to the property/casualty actuary and where the actuary places most attention, as these ratios are specifically commented on by the appointed actuary in the Statement of Actuarial Opinion (SAO).

There are three reserve ratios:

[188] Per the description of the publication *Ratio Results for the IRIS* on the NAIC and The Center for Insurance Policy and Research, NAIC Store, Financial Regulation Publication on IRIS, http://www.naic.org/store_pub_fin_receivership.htm#iris_results.

IRIS ratio 11: One-year reserve development to policyholders' surplus
IRIS ratio 12: Two-year reserve development to policyholders' surplus
IRIS ratio 13: Estimated current reserve deficiency to policyholders' surplus

These three ratios focus on the development of an insurance company's net loss and LAE reserves for purposes of understanding reserve adequacy. IRIS ratio 11 is the same one-year development test as provided in the Five-Year Historical Data exhibit within the Annual Statement. It measures development in the company's net loss and LAE reserves over the past year, whether adverse or favorable, relative to prior year surplus. Essentially, this test looks to see how much surplus would have been absorbed or enhanced in the prior year as a result of adverse or favorable development in the corresponding net loss and LAE reserves. Adverse development is shown as an increase to reserves and therefore a positive number. Results of IRIS ratio 11 equal to or greater than 20% are considered unusual.

IRIS ratio 12 is the same two-year development test as provided in the Five-Year Historical Data exhibit within the Annual Statement. It measures development in the company's net loss and LAE reserves over the past two years, relative to surplus at the end of the second prior year. Like ratio 11, results of IRIS ratio 12 equal to or greater than 20% are considered unusual.

IRIS ratio 13 is a hindsight test. It looks at a company's net outstanding loss and LAE reserves at the immediate prior two years relative to calendar year earned premium for those years and adds to the reserves development that has emerged over that period (one-year development for the immediate prior year; two-year development for the year prior to that). The test then applies the average of the resulting two "adjusted" loss ratios to earned premium for the recent year to determine what the outstanding loss reserve should be. A calculated deficiency in recorded loss and LAE reserves of 25% or more is deemed to be unusual.

The purpose of this test is to identify companies that may not have gotten their reserves "right" in the past. The expectation inherent in this test is if companies have had adverse development in the past, they will probably have adverse development in the future. Regulators want to see if companies who have had such adverse development have corrected for it in their current estimates.

## INTERPRETING THE RESULTS OF THE SYSTEM

The IRIS results are used to prioritize insurers requiring further analysis through examination by the state insurance regulatory system. An unusual value does not necessarily mean that the insurer is financially impaired. The NAIC *IRIS Ratios Manual* states, "No state can rely on the tools' results as the state's only form of surveillance."[189]

[189] Ibid., page 2.

# PART V. FINANCIAL HEALTH OF PROPERTY/CASUALTY INSURANCE COMPANIES IN THE U.S.

## INTRODUCTION TO PART V

In Part IV. *Statutory Filings to Accompany the Annual Statement* we presented details underlying several filings either included within or supplemental to the statutory Annual Statement. These and other tools, including on-site financial examinations and Financial Analysis Solvency Tools (FAST, of which the IRIS System is a part), provide a means for the regulator to monitor the financial health of an insurance company. Many of these tools are confidential. However, certain results can be derived from publicly available information, such as the result of RBC, which is included within the Five-Year Historical Data exhibit in the Annual Statement.

The monitoring performed by regulators is risk-focused and intended to identify financially troubled companies well before they are impaired. Regulators use the tools collectively to evaluate financial health and prioritize those insurers requiring additional scrutiny and analysis.

While policyholders and investors place heavy reliance on state insurance regulators in monitoring the health of property/casualty insurance companies, they themselves have access to the publicly available tools, such as quarterly and Annual Statement filings, the Statement of Actuarial Opinion, and Securities and Exchange Commission filings (for publicly traded companies). Also, to assess financial health, they rely on ratings and analyses performed by credit rating agencies, such as A.M. Best, Moody's, Standard & Poor's and Fitch. Each of these rating agencies uses internally developed capital adequacy models to perform qualitative and quantitative financial strength assessments and establish a company's rating.

In this section we provide a summary of the tools used by regulators and stakeholders in monitoring an insurance company's financial health and briefly explain how these tools are used in practice.

## CHAPTER 21. MEASUREMENT TOOLS

Before we discuss what the tools mentioned in the introduction do, it is important to disclose what they don't do.

First, each measurement tool provides one piece of evidence and should not be taken as the only evidence of a healthy or troubled insurance company. For example, an insurance company may have "usual" values for each of its Insurance Regulatory Information System (IRIS) ratios, but something about the company's exposures or a pending regulatory decision may result in a risk of material adverse deviation in the company's reserves, and such risk could be material to the company surplus. The risk of material adverse deviation would be discussed in the Statement of Actuarial Opinion (SAO) by the appointed actuary, and in reading that disclosure, the regulator would determine the necessary steps for further investigation. In this example, neither the results of the IRIS ratios nor the SAO should be considered alone; other information should be incorporated into an evaluation of an insurance company's health.

Second, these tools don't supplant the audit of an insurance company. In fact, the audited financial statements are themselves a tool used by the stakeholders and regulators of an insurance company. Further, these tools will not ensure that the data used as input into the tools is accurate and complete, nor will they provide any insight as to whether the company's management has good internal management, systems and controls in place. However, weaknesses in company management, systems and/or controls eventually leach into the output from the tools.

Finally, these tools will not identify fraud, which can be difficult to uncover.

WAYS IN WHICH THESE TOOLS ARE USED TO MEASURE FINANCIAL HEALTH

When viewed together, these tools can provide valuable insight into the financial health of a property/casualty insurance company. The information gathered from one tool may not in itself be an indicator but may prompt additional investigation, either through the evaluation of other tools or inquiry of company management.

Further, the results from a single year may not immediately suggest financial impairment; however, a review of these results over several years may identify a trend in that direction. When reviewed together and across multiple years, these tools can be used to provide an early warning of companies that are of higher risk for financial impairment.

*Annual and quarterly financial statements and schedules*

Insurance companies are required to file financial statements every quarter. To summarize what we learned in preceding chapters, substantial detail is contained in the annual filing (i.e., as of December 31), including qualitative information in the form of detailed notes to financial statements and interrogatories. These statements are filed under Statutory Accounting Principles. As discussed, statutory accounting focuses on protecting the policyholder and therefore is known as maintaining more of a conservative stance relative to Generally Accepted Accounting Principles. Assets and liabilities tend to be measured on a basis that includes some cushion in the event of financial impairment.

There are two perspectives of financial health measured by the statutory financial statement: balance sheet strength and earnings potential. In terms of balance sheet strength, regulators are concerned with an insurance company's claim-paying ability and therefore focus on areas that could impair solvency. Two such areas are loss and loss adjustment expense (LAE) reserve and unearned premium reserve adequacy. Loss and LAE reserves make up the largest item on the liability side of an insurance company's balance sheet, representing one-third of total Liabilities, Surplus and Other Funds at year-end 2018 for the U.S. property/casualty insurance industry. Coupled with unearned premium reserves, these liabilities represent nearly half of the total 2018 Liabilities, Surplus and Other Funds for all U.S. property/casualty insurers in aggregate.

The Five-Year Historical Data exhibit provides a historical view of how an insurance company's losses have developed over time. Additionally, the Notes to Financial Statements provide management discussion of changes in incurred loss and LAE. Data from Schedule P, Parts 2 through 4 can also be used to perform independent tests of a company's reserve adequacy.

Because loss reserves are stated on a net of reinsurance basis on the balance sheet, reinsurance collectability is also an area of risk relative to the statutory financial statements. The provision for reinsurance is established on the liability side of the balance sheet to offset some of this risk by excluding a portion of reinsurance recoverables from unauthorized and overdue authorized reinsurers. Despite the establishment of the provision for reinsurance, reserve credit risk still exists. The Notes to Financial Statements are a means to identify reinsurance that is unsecured, uncollectible or in dispute. And Schedule F, Part 3 can be used to identify the company's reinsurers so that additional review of the reinsurers' financial strength can be performed. For example, the credit rating of each reinsurer can be determined from recognized rating agencies, such as those mentioned later in this chapter.

Accident-year loss and LAE ratios from Schedule P, Part 1 provide insight into the adequacy of claim reserves and unearned premium reserves. For example, property/casualty actuaries look at current accident year incurred loss and LAE ratios by line of business relative to prior year ratios adjusted for rate change and trend. Deviations from anticipated trends are typically investigated to assess adequacy of loss and LAE ratios on the current accident years. To illustrate, for a line of business experiencing loss trend of +5% and rate change of -3% on premiums earned in 2019 over 2018, one might initially expect the accident year 2019 loss and LAE ratio to be approximately 8% higher (= 1.05 / 0.97 - 1) than that for

2018. That is, if the accident year 2018 loss and LAE ratio was 60%, one would expect the accident year 2019 ratio to be 65% (60% * 1.08). If the loss and LAE recorded in Schedule P, Part 1, for accident year 2019 was 55%, one might question the rationale behind an improvement in loss ratio, when deterioration was expected.

Additionally, deficiencies in loss and LAE reserves or current accident-year loss and LAE ratios in excess of 100% lead to further investigation of whether the unearned premium is adequate to cover losses that will emerge as premium is earned. In performing such an investigation, consideration is often made for investment income.

In terms of the asset side of the balance sheet, property/casualty insurance companies tend to invest in short-duration, relatively liquid fixed-income investments. Nearly 50% of the assets held by U.S. property/casualty insurers at year-end 2018 were in bonds. However, the financial crisis in 2008 taught us that even conservative investment strategies can pose a risk to insurance companies. Changes in asset values and yields on invested assets are monitored to assess this risk.

Further, investment in asset classes where the level of risk exceeds industry norms stimulates investigation of the hedging strategies a company has in place to mitigate risk.

While a company's balance sheet may appear financially solid, future earnings can be impaired by a company's underwriting, pricing and investment strategy. Although the Annual Statement schedules and exhibits may not be able to uncover a weakening in earning strength on their surface, trends in financial ratios and other analysis of year-over-year changes in income statement line items can provide an early warning. Examples of such trends include:

- Rapid and substantial growth in written premium and the timing of such growth relative to the underwriting cycle: In soft markets it is difficult to achieve significant growth without concessions on price or commission levels. The Five-Year Historical Data provides historical premium volume on a gross and net basis to assist in measurement of a company's growth.
- Increases in underwriting (or other) expense ratios: This may also be a sign that an insurer is conceding commission to grow or maintain business. Increases in commissions or other expenses mean that there is less premium available to pay losses. The income statement and Part 3 of the Underwriting and Investment Exhibit (U&IE) and the Insurance Expense Exhibit (IEE) are sources of this data.
- Deteriorating loss ratios: Historical loss ratios can be observed on a calendar-year basis in the Five-Year Historical Data or by accident year and line of business in Schedule P. Deterioration in loss ratios implies that pricing is not keeping pace with the underlying risk being underwritten. Further investigation into a company's price monitoring practices relative to peer benchmarks and ability to increase rates would be warranted.

- Increased exposure to catastrophic or large events: A review of writings by state in Schedule T and writings by line of business per the U&IE can help to identify catastrophe exposure. A company with premium concentration in Florida homeowners business suggests that the company may have increased exposure to hurricane risk. Further, a review of Part 2 of the general interrogatories provides information regarding a company's probable maximum loss and provisions in place to protect the company against such loss, such as a catastrophic reinsurance program.

- Losses on investments, change in mix of invested assets by class and/or declining yields on investment assets: Such trends may suggest a change in a company's investment strategy or lack of control in the strategy.

- Increases in the provision for reinsurance: Changes in the provision for reinsurance, as displayed in the capital and surplus account of the income statement, can be a sign of increased credit risk.

Quarterly statements provide more limited information than what is included in the annual filing. However, the primary financial statements remain in the same general format (i.e., Assets page; Liabilities, Surplus and Other Funds; Statement of Income; Cash Flow; and Notes to Financial Statements), as do many of the schedules. The evaluation date is the quarter-end and comparisons are made to the prior year-end. From the perspective of a property/casualty actuary, the biggest difference is that quarterly statement does not include Schedule P. Schedule P is replaced with a schedule titled "Part 3," which shows loss and LAE reserve development during the quarter for the latest three accident years and all years prior, for all lines of business in the aggregate. While this schedule provides a gauge of retrospective reserve strength during the current year, it does not provide all of the line of business detail that is provided annually in Schedule P.

There is a wealth of information contained in the annual and quarterly statements. But because more than 5,000 companies file their statements, state regulators of insurance companies may not have the resources available to analyze these filings in detail for every company domiciled or licensed to write business in their state. Rather, regulators rely on the other tools coupled with the financial statements and schedules to prioritize those companies of greatest risk of financial impairment.

*IRIS*

As discussed in Chapter 20. *IRIS Ratios*, IRIS is one tool used by regulators. The IRIS ratios focus on balance sheet strength and the earnings quality through measures that assess growth, profitability, liquidity, and reserve development/adequacy.

Although the IRIS ratio results are not widely available to the public, they can be calculated directly from an insurance company's Annual Statement. We have done so for Fictitious in Appendix I of this publication.

While there is no direct link to regulatory intervention based on the results of these ratios, the results of the IRIS values are considered by regulators in conjunction with other solvency monitoring tools, such as Risk-Based Capital (RBC), to prioritize those insurance companies requiring immediate regulatory attention.

*RBC*

RBC is another tool that considers balance sheet strength and future earnings. Balance sheet risk is considered in the asset risk charges ($R_0$ through $R_3$), while profitability of future writings is contemplated through the underwriting risk charges ($R_4$ and $R_5$) and the catastrophe risk charge ($R_{CAT}$).

The calculations underlying an insurance company's RBC are confidential and cumbersome to perform without using the spreadsheet provided with the NAIC instructions. However, the results of the RBC formula are provided in the Five-Year Historical Data exhibit within the Annual Statement. Stakeholders are able to review overall results and monitor changes over time.

RBC considers the risks and relative size of an insurance company in computing a required level of capital, whereas under IRIS, no adjustments are made to reflect what would be "usual" for an individual insurance company. Unlike IRIS, there is a direct link to regulatory intervention based on a comparison of the RBC level of required capital to the company's total adjusted capital. The NAIC RBC Model Act provides regulators with the authority to take control of a property/casualty insurance company if the company's RBC ratio falls below 100% of the ACL.

RBC isn't a fail-safe test for financial impairment. While certain of the RBC factors consider a company's own experience, the majority of the factors used to determine the level of required capital are based on industry-wide factors developed by the NAIC. As a result, while a company's RBC ratios may not require any specific action by the company management or regulatory authorities, this doesn't mean that the company is safe from future impairment.

The trend test is one way that the RBC results are used to identify companies that may become financially impaired. The purpose of the trend test is to identify companies likely to fall in the company action level RBC in the coming year and require those companies to take action before that happens.

The trigger for application of company action within the trend test is having an RBC ratio within 100 points of the company action level RBC, coupled with a current-year combined ratio of more than 120%.

*SAO*

The SAO provides assurance of a qualified actuary that the company's loss and LAE reserves are reasonable on a gross and net of reinsurance basis. It is not an opinion on the solvency of an insurance company but an opinion on the adequacy of what is typically the largest item on an insurance company's balance sheet. Significant deviations in this balance may have a material impact on a company's solvency. Therefore, the actuary will provide commentary of any significant uncertainties or risks that could result in a material adverse deviation in the company's recorded reserves.

A determination by the appointed actuary that the reserves are anything other than "reasonable" and relevant comments that indicate there is are significant risks and/or uncertainties that could result in material adverse deviation are two triggers of additional scrutiny by regulatory authorities.

One thing the SAO does not tell the reader is the company's reserve position within the appointed actuary's range, if the appointed actuary calculates a range. A company that is exposed to significant risks and uncertainties, with reserves lying at the lower bound of the actuary's range, would be subject to greater concern than a company exposed to the same level of risk with reserves in the high end of the appointed actuary's range. There is no document available for public review, which includes rating agencies, that contains the appointed actuary's range. The appointed actuary's range is contained in the Actuarial Opinion Summary (AOS), SAO documentation report, and usually found in the work papers of the company's external auditors.

As noted previously, the AOS is a confidential document, for regulators only. The actuarial report contains the range; however, these reports contain restrictions on distribution and use, due to their confidential nature, and therefore are not widely distributed. Similarly, while audit work papers may be subpoenaed for cause, they are not publicly available.

*AOS*

The AOS is valuable in providing the regulator with context as to the company's reserve adequacy by providing the company's position relative to the appointed actuary's point estimate or range, if calculated, on a net and gross of reinsurance basis. It also provides details that explain to the regulator the cause for adverse development in the company's reserves over the past five years, where such development has exceeded 5% of surplus in three of those years. The AOS is also a confidential document that is only shared with the insurance company's state regulator.

*Credit Rating Agencies*

Stakeholders also rely on financial strength ratings (FSRs) issued by credit rating agencies (CRAs) in the evaluation of financial health. FSRs represent a CRA's evaluation of an insurance company's ability to

meet ongoing obligations to its policyholders. This is in contrast to debt/issuer credit ratings, which are also provided by CRAs. Debt/issuer ratings represent the CRA's evaluation of a company's ability to meet debt obligations. Debt/issuer credit ratings are provided on the creditworthiness of the entity as a whole or on individual debt instruments.

Of the CRAs that rate insurance companies, A.M. Best is the only one that focuses exclusively on the insurance industry, providing FSRs and debt/issuer ratings. A.M. Best rates thousands of insurance entities across the globe. Other CRAs, such as Standard & Poor's (S&P), Moody's and Fitch serve a wide range of industries (ranging from aerospace to utilities, financial institutions and the public sector) and are prevalent in the area of debt/issuer ratings.

Ratings are based on qualitative and quantitative analysis of a company's financial statements and organization. Each CRA uses its own criteria. Qualitative factors can include corporate governance, product development, composition of capital structure, asset quality, investment strategy, reserve adequacy, claims management, contingent assets and liabilities, and the level of reinsurance dependency. Quantitative analysis includes running a company's financial data through capital adequacy models. Each CRA has its own internally developed model that computes required capital levels. Similar to RBC, the required capital levels are computed and compared to an insurer's capital to produce a ratio that translates to letter ratings. Examples of CRA models include Best's Capital Adequacy Ratio and S&P's Capital Adequacy Ratio.

The higher the rating, the greater the ability the company is deemed to have to meet its ongoing insurance obligations. The ability to meet ongoing insurance obligations generally diminishes as ratings decrease. For example, A.M. Best's FSR scale includes 7 rating symbols from A+ (superior) to D (poor), with rating notches applicable to symbols A+ through C (weak) to reflect a gradation of financial strength denoted by an additional "+" or "-". With the rating notches there are a total of 13 FSR designations. There are also 4 non-rating designations of E (in conservation or rehabilitation), F (in liquidation), S (rating suspended) and NR (not rated).[190] Regardless, the CRAs provide no guarantee that the insurance company will be able to meet its obligations.

FSR ratings are generally established annually, with ongoing monitoring performed by the CRA analyst throughout the year to evaluate the impact of developments on a company's rating. Ongoing monitoring includes review of the following:

- Statutory financial statement filings
- Interim management reports and other information provided by the insurer to the rating agency
- Significant public announcements, including earnings releases/calls, made by the entity

[190] A.M. Best, Ratings & Criteria Center, *Best's Financial Strength Rating,* http://www.ambest.com/ratings/guide.pdf, 2019.

A rating action or review can be considered at any time that A.M. Best becomes aware of significant development in the insurer's operations.

The following provides examples of the uses of FSRs by stakeholders of insurance companies:

- Individual and corporate policyholders want to make sure the insurance company will be there when needed to pay claims. They therefore look to the FSR as an indicator in their insurance buying decisions, weighing the company's rating against the cost of insurance.
- Many boards of directors of corporate policyholders require that their organization's insurance purchases are made with highly rated insurance companies. After the financial crisis, many large corporations required insurance companies to include cancellation endorsements to allow the insured to cancel without penalty if the carrier was downgraded below a certain level(s) by recognized CRAs.
- Insurance companies will also look at FSRs of reinsurers in making reinsurance buying decisions.
- Investors look at FSRs in their decision to invest in an insurance company, weighing risk relative to the company's rating with expected return.

HOW THESE TOOLS HAVE FARED — INDICATORS OF INSURANCE COMPANY INSOLVENCIES OVER THE PAST 40 YEARS

The measurement tools discussed in this publication are designed to assist in predicting or preventing all insurance company failures, but it is impossible for a tool to work in all circumstances. The intent, however, is that they identify the vast majority before it's too late.

Over the years, studies have been performed to detect the cause of insurance company failure and therefore sharpen the tools that are available to monitor solvency. The American Academy of Actuaries (AAA) has issued three such studies that, collectively, have examined property/casualty insurance company insolvencies over a 40-year period, from 1969 through 2009. The following contains the results of these studies and common themes observed in insolvent companies prior to their demise.

The AAA Property/Casualty Financial Soundness/Risk Management Committee (the FSRM) published a report in September 2010 titled *Property/Casualty Insurance Company Insolvencies*. This report revisited the issue of insurance company solvencies, which was examined in two previous studies in the 1990s by AAA, one based on property/casualty insurance company insolvencies over the period 1969 to 1987 and the other from 1988 to 1990. The AAA's research included submitting a questionnaire to insurance regulators on the causes of the insurance company failures over that time period. In each period, "under-reserving" and "mismanagement" were the first and second most frequently cited cause of insurance company insolvencies.

Given that the adequacy of loss reserves was historically cited as the primary cause of insolvency in the prior two studies, the 2010 report focused on the performance and characteristics of companies having the largest reserve deficiencies. Additionally, the FSRM studied five years' worth of historical financial

data for 36 property/casualty insurance companies that became insolvent over the period 2005 to 2009 for commonalities. The 2010 report concluded the following:

- Insolvency is caused by a combination of factors. "Under-reserving" is a factor in the insolvency of property/casualty insurance companies but "is not the leading cause of insolvency." [191]
- Size, experience and diversification matters. "The majority of the companies was small, relatively new, and/or was concentrated in one line of business and/or state."[192]
- Good management and governance is essential. "The review of financial data for many of the companies showed evidence of poor management and decision-making, including little or no reinsurance, inadequate reinsurance for the amount of risk, very rapid premium growth, significant adverse development, inadequate pricing, and potentially serious data problems."[193]

The report also studied the SAO as an indicator of financial impairment over the immediate five years prior to insolvency. The FSRM concluded that the SAO alone is not a backstop for insurance company insolvencies, but it "can help identify those companies and/or categories of companies that could be in trouble."[194] Where opinions were available, the FSRM observed the following:

- Only one SAO was qualified, and the remaining were "reasonable" reserve opinions.
- Nearly 50% of the SAOs concluded that a risk of material adverse deviation existed in the company's loss and LAE reserves, 37% concluded that such a risk did not exist, and the remainder of the SAOs either did not comment on the risk of material adverse deviation or it wasn't clear if the appointed actuary deemed a risk of material adverse deviation existed.
- When stated, materiality standards were generally based on a percentage of surplus (between 5% and 20%).

We note that the NAIC *Actuarial Opinion Instructions* and Actuarial Standards of Practice issued by the Actuarial Standards Board have continued to include enhancements on disclosure requirements within the SAO since the period studied.

The commonalities identified in the above studies provide us with areas of focus when evaluating the tools used to measure financial health. The key message is that financial impairment is caused by a variety of factors, and the measurement tools discussed in this publication, when considered in unison, can help detect companies at risk for financial impairment.

[191] American Academy of Actuaries Property/Casualty Financial Soundness/Risk Management Committee. *Property/Casualty Insurance Company Insolvencies,* September 2010, page 5.
[192] Ibid., page 16.
[193] Ibid.
[194] Ibid., page 18.

# PART VI. DIFFERENCES FROM STATUTORY TO OTHER FINANCIAL/REGULATORY REPORTING FRAMEWORKS IN THE U.S.

## INTRODUCTION TO PART VI

As discussed in Part III. *SAP in the U.S.: Fundamental Aspects of the Annual Statement*, U.S. Statutory Accounting Principles (SAP) focuses on the solvency of insurance companies. However, other frameworks exist for solvency, general purpose financial reporting, and taxation. In this section we will examine these other frameworks, beginning with general purpose financial reporting.

The framework in the U.S. for general purpose financial reporting is U.S. Generally Accepted Accounting Principles (GAAP). We will focus on the key differences between U.S. SAP and U.S. GAAP. We will also study the importance of accounting for business combinations and consider calculations that involve actuaries in fair valuing the balance sheet in accordance with the requirements of U.S. GAAP. We will provide an overview of the emergence of International Financial Reporting Standards as a general purpose financial reporting framework. We will also provide a brief overview of the European regulatory framework known as Solvency II. Finally, we will discuss financial reporting for tax purposes.

## CHAPTER 22. U.S. GAAP[195], INCLUDING ADDITIONAL SEC REPORTING[196]

OVERVIEW

U.S. Generally Accepted Accounting Principles (GAAP)for public companies is, by statute, determined by the Securities and Exchange Commission (SEC). The SEC has effectively delegated this responsibility since its inception to the private sector. Currently, the SEC looks to the Financial Accounting Standards Board (FASB) as the organization for establishing standards of financial accounting. In 2009, the FASB codified U.S. GAAP by publishing its Accounting Standards Codification (ASC). The ASC replaced several sources of authoritative U.S. GAAP literature from various standard setters. These sources included:

1. FASB
    a. Statements (FAS)
    b. Interpretations (FIN)
    c. Technical Bulletins (FTB)
    d. Staff Positions (FSP)
    e. Staff Implementation Guides (Q&A)
    f. Statement No. 138 Examples.
2. Emerging Issues Task Force (EITF)
    a. Abstracts
    b. Topic D.
3. Derivative Implementation Group (DIG) Issues
4. Accounting Principles Board (APB) Opinions
5. Accounting Research Bulletins (ARB)
6. Accounting Interpretations (AIN)
7. American Institute of Certified Public Accountants (AICPA)
    a. Statements of Position (SOP)
    b. Audit and Accounting Guides (AAG) — only for incremental accounting guidance
    c. Practice Bulletins (PB)
    d. Technical Inquiry Service (TIS) — only for Software Revenue Recognition

References to the newly codified standards usually start with the letters ASC followed by a series of numbers. Insurance specific guidance can be found in Section 944. For example, the definition of the measurement approach to unpaid claims estimates under U.S. GAAP can be found at ASC-944-40-30-1. It states: “The liability for unpaid claims shall be based on the estimated ultimate cost of settling the claims (including the effects of inflation and other societal and economic factors), using past experience

[195] Aligns with IASA Chapter 14.
[196] Aligns with IASA Chapter 15.

adjusted for current trends, and any other factors that would modify past experience." A free basic version of the ASC is available, after registering, at https://asc.fasb.org/.[197]

Historically, U.S. GAAP formed the foundation of U.S. Statutory Accounting Principles (SAP). From this foundation, U.S. SAP evolved over time (on a state by state basis), incorporating many modifications and exceptions to U.S. GAAP in the interest of establishing a more conservative accounting framework with a focus on solvency. In the 1990s, the National Association of Insurance Commissioners (NAIC) undertook a project (Codification) to consolidate the myriad state-based rules and exceptions to U.S. GAAP into a cohesive set of accounting principles. included in the NAIC *Accounting Practices and Procedures Manual*. SAP still remains the prerogative of each individual state; however, Codification provides a consistent and comprehensive framework of accounting and reporting guidance for each state insurance department to consider. As new pronouncements are made under U.S. GAAP, they are reviewed by the NAIC's Statutory Accounting Principles Working Group, which decides whether to adopt, reject or modify it for NAIC SAP. In turn, each state may accept what the NAIC has produced or adopt deviations or develop exceptions to the guidance that would apply to insurance entities domiciled in that state.

The fundamental difference between U.S. SAP and U.S. GAAP is driven by the intended user. U.S. SAP is intended for use by state insurance regulators and is thus focused on an insurance company's ability to pay claims, emphasizing the adequacy of surplus in the balance sheet. This is generally viewed as conservative-leaning philosophy to provide an element of margin if the regulator would need one day to step in to settle all current liabilities while not writing any new business. U.S. GAAP is primarily intended for use by investors and creditors and has historically been focused on the measurement of earnings emergence, through the income statement, over a specified reporting period. Given the objective of U.S. SAP, it is not surprising that it is viewed as a conservative basis of accounting in comparison to U.S. GAAP.

There are many differences between U.S. GAAP and U.S. SAP, but we will focus on those that actuaries need to be familiar with:

- Deferred acquisition costs (DAC)
- Premium deficiency reserves (PDR)
- Nonadmitted assets
- Deferred tax assets (DTAs)
- Invested assets
- Balance sheet presentation of reinsurance
- Ceded reinsurance — prospective and retroactive
- Structured settlements
- Anticipated subrogation and salvage
- Discounting of loss reserves

[197] FASB, *Accounting Standards Codification,* https://asc.fasb.org/, 2012.

- Goodwill under purchase accounting

DEFERRED ACQUISITION COSTS

DAC is an asset that is established under GAAP to defer the recognition of acquisition expenses to match the recognition of earned premium. Beginning in 2012, the deferral of acquisition costs is limited to those direct costs (i.e., those which would not have been incurred if the contract had not been entered into) related to the successful acquisition or renewal of a contract. In addition, certain direct marketing advertising costs can be deferred under very limited circumstances. All other expenses, either direct or indirect, must be expensed as incurred.

Certain companies are permitted to limit the capitalization (deferred expenditure) of DAC to those expenses they had been capitalizing prior to 2012 if they previously had not been capitalizing all expenses that met the definition of direct expenses related to the successful acquisition or renewal of insurance contracts. Capitalization of acquisition costs, through the establishment of a DAC asset, is not permitted under SAP. Therefore, all acquisition costs are expensed to current operations as incurred. This is keeping with the conservative philosophy of SAP.

Under SAP, if the ceding commission under a reinsurance agreement exceeds the anticipated acquisition cost of the business ceded, the ceding entity shall establish a liability, equal to the difference between the anticipated acquisition cost and the reinsurance commissions received, to be amortized over the effective period of the reinsurance agreement in proportion to the amount of coverage provided under the reinsurance contract. For example, when the commission rate of a company's direct business is 10% and the ceding commission rate charged for the business ceded is 20%, it is likely that after considering all other anticipated direct acquisition costs, the ceded commission is still higher than the direct acquisition cost of the business being ceded. While the recognition of a DAC asset is not permitted, and the corresponding direct acquisition costs should be expensed to current operations, in this example, a net liability must be recognized by the ceding entity, reported as a write-in liability item on the balance sheet rather than a gain to the current operations. This effectively defers the gain until such time as the premium is earned.

## PREMIUM DEFICIENCY RESERVES

Under both GAAP and SAP, a PDR must be recognized with a charge to current operations when the unearned premium reserve (UPR) is insufficient to cover the anticipated losses, loss adjustment expenses, commissions and other acquisition costs, and maintenance costs associated with the unexpired exposure. When a company performs the premium deficiency analysis, insurance contracts should be grouped in a manner consistent with how policies are marketed, serviced and measured. A liability should be recognized for each policy grouping where a premium deficiency is indicated. Premium deficiency from one policy grouping cannot be offset by expected profits from any other grouping.

Under both GAAP and SAP, a company is allowed to include anticipated investment income in the premium deficiency analysis.

*The major difference in the calculation of premium deficiency liability between GAAP and SAP is that under SAP, commissions and other acquisition costs should not be included to the extent that the related amounts have previously been expensed rather than established as an asset.*

The table below, using three numerical examples, illustrates the difference in the calculation of premium deficiency liability between GAAP and SAP:

TABLE 100

| Policy Grouping | UPR | Present Value of Total Expected Loss | Anticipated Investment Income | DAC | GAAP-basis Expected Profit | GAAP-basis Premium Deficiency Calculated | SAP-basis Expected Profit | SAP-basis Premium Deficiency Calculated |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) = (1) – (2) + (3) – (4) | (6) | (7) = (1) – (2) + (3) | (8) |
| A | $10,000 | $8,000 | $500 | $2,000 | $500 | $0 | $2,500 | $ - |
| B | $10,000 | $9,000 | $500 | $2,000 | $(500) | $500 | $1,500 | $ - |
| C | $10,000 | $12,000 | $500 | $2,000 | $(3,500) | $3,500 | $(1,500) | $ 1,500 |

### Balance Sheet Presentation of Deferred Acquisition Costs and Premium Deficiency Reserves

Under GAAP, DAC is established as an asset and is presented net of ceded DAC. If a PDR is calculated, it first lowers the recorded DAC asset; once the DAC asset is exhausted, a separate PDR liability should be established.

Under SAP, any premium deficiency is either included in the UPR balance or reported as a write-in liability item.

The table below illustrates the difference in the presentation of DAC and PDR between GAAP and SAP.

TABLE 101

| Policy Grouping | Original DAC | GAAP-basis Premium Deficiency Calculated | GAAP-basis DAC Asset | GAAP-basis PDR Liability | SAP-basis Premium Deficiency Calculated | SAP-basis DAC Asset | SAP-basis PDR Liability |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 1 | $2,000 | $ - | $2,000 | $ - | $ - | $ - | $ - |
| 2 | $2,000 | $500 | $1,500 | $ - | $ - | $ - | $ - |
| 3 | $2,000 | $3,500 | $ - | $1,500 | $1,500 | $ - | $1,500 |

NONADMITTED ASSETS

As discussed in Part III. *SAP in the U.S.: Fundamental Aspects of the Annual Statement*, SAP is focused on the ability of an insurance company to pay claims. To reflect that certain assets are not readily liquid, they are considered nonadmitted for purposes of determining the company's statutory surplus. One such example is furniture, fixtures and equipment.

For other asset categories, matters are more complicated as they may be partly admitted and partly nonadmitted. One such asset category is DTAs.

DEFERRED TAX ASSETS

Under GAAP and SAP, deferred taxes are established for temporary differences in the accounting and tax treatment of all assets and liabilities. For example, discounting of loss reserves for tax purposes but not for accounting purposes leads to a deferred tax asset. This is because you pay tax based on income (revenue minus expenses) under the tax accounting basis. If liabilities incurred are discounted for tax purposes, this leads to higher income, which produces more tax for the taxing authorities. But the discount on incurred losses will unwind over time and create an expense that will reduce future taxable income. Some or all of this reduction to future taxable income is what is recorded as a DTA.

The primary difference between GAAP and SAP is in the treatment of DTAs. For GAAP, DTAs are fully recognized, and a valuation allowance is established if, based on the weight of evidence, it is more likely than not that the DTAs will not be realized. GAAP establishes a hierarchy of evidence to be considered. This is a subjective determination requiring management to use significant judgment. Under SAP, there is a strict admissibility test for all DTAs in addition to the establishment of a valuation allowance. This can lead to recognition of less DTAs in SAP basis financial statements. Since January 1, 2012, the admitted portion is calculated as the sum of the following three components:[198]

1. Federal income taxes paid in prior years that can be recovered through loss carrybacks for existing temporary differences that reverse during a timeframe corresponding with IRS tax loss

[198] This recent change is not reflected in the 2007 Feldblum taxation CAS Study Note.

carryback provisions[199] (not to exceed three years), including the amount established for tax loss contingencies related to those periods.

2. The amount of DTA expected to reverse during the forthcoming period (up to a maximum of three years), limited to a percentage of surplus. The period and percentage of surplus is determined based on the company's ratio of total authorized capital (with some adjustments) to authorized control level (ACL) Risk-Based Capital (RBC). For example, the December 31 ratio is calculated based on the Authorized Control Level RBC for the current reporting period, which is in process of being filed with the company's state of domicile. Different rules apply for non-RBC reporting entities such as mortgage guarantee insurers.
3. The amount of DTA after application of the first and second components that can be offset against existing DTLs. The character (i.e., ordinary vs capital) of the DTAs and DTLs must be taken into consideration. Ordinary DTAs can be admitted by offset with ordinary DTLs and/or capital DTLs; however, capital DTAs can only be admitted by offset with capital DTLs.

INVESTED ASSETS

Under SAP, investment-grade bonds and higher quality redeemable preferred stocks are held at cost or amortized cost while below-investment-grade bonds and lower quality redeemable preferred stocks are held at the lower of cost, amortized cost or fair value. All common stock and higher quality perpetual (i.e., non-redeemable) preferred stock are recorded at fair value. Lower quality non-redeemable preferred stock are held at the lower of cost or fair value. Changes in the carrying value of investments attributed to changes in fair value are recorded directly to surplus.

The accounting treatment of investment-grade bonds appears to be inconsistent with the conservative philosophy of SAP. In the case of increasing interest rates, the market value of older investment-grade bonds issued at a lower interest rate will decrease. Yet SAP allows for the asset to be carried at the higher amortized cost value. One possible explanation for this is that the difference is only temporary if the bond is held until maturity, as is typically done by most property/casualty insurers.

Effective December 31, 2017, SAP adopted a revised definition of bonds that identifies certain non-bond types of non-bond investments as SVO-identified investments that receive special statutory accounting treatment under the new guidance. These specifically identified investments shall be treated in the same way as those included in the revised definition of bonds. The new guidance also introduces the concept of systematic value for SVO-identified investments and allows a company to elect the use of a documented systematic approach to value its higher quality SVO-identified investments if certain conditions are met. SVO-identified investments for which the company has not made this election, or do not qualify for the use of systematic value, should be measured and reported at fair value. Net asset value (NAV) is allowed to be used as a practical expedient to fair value for these investments.

[199] Under the Federal Internal Revenue Code, for nonlife insurance entities, ordinary losses can be carried back two years, while capital losses can be carried back three years.

The table below summarizes the accounting treatment under SAP for investments in bonds, common stocks, preferred stocks and SVO-identified investments[200]:

TABLE 102

| Investment Type | NAIC Designation | Book Value |
|---|---|---|
| Bonds (both long-term and short-term) | 1-2 | Amortized cost |
| Bonds (both long-term and short-term) | 3-6 | Lower of amortized cost or fair value |
| Common Stocks | N/A | Fair value |
| Redeemable Preferred Stocks | 1-2 | Cost or amortized cost |
| Nonredeemable Preferred Stocks | 1-2 | Fair value |
| Redeemable Preferred Stocks | 3-6 | Lower of cost, amortized cost or fair value |
| Nonredeemable Preferred Stocks | 3-6 | Lower of cost or fair value |
| SVO-Identified Investments | 1-2 | Fair value unless systematic value is elected |
| SVO-Identified Investments | 3-6 | Fair value |

Under U.S. GAAP, financial instruments such as bonds and stocks are classified as Available-For-Sale (AFS), Held-To-Maturity (HTM) or trading securities. The acquiring entity classifies the financial instrument at the time of acquisition, and the appropriateness of the classification is reassessed at each reporting date. If a security is acquired with the intent of selling it within hours or days, the security is classified as trading. However, at acquisition an entity is not precluded from classifying a security as trading if it plans to hold it for a longer period. Trading securities include both debt and marketable equity securities. Trading securities are recorded at fair value with changes in fair value recorded in the income statement. Investments in debt securities are classified as HTM only if the reporting entity has the positive intent and ability to hold those securities to maturity. Equity securities cannot be classified as HTM because they do not have a stated maturity date. HTM debt securities are recorded at amortized cost. Investments in debt securities and equity securities that have readily determinable fair values not classified as either trading securities or HTM securities are classified as AFS securities. The AFS category is the default or residual security classification. AFS securities are recorded at fair value with changes in fair value reported in other comprehensive income (OCI), resulting in a direct change to the value of U.S. GAAP equity, rather than changes in their fair value flowing through the income statement. Most property/casualty companies' financial instruments are classified and measured as AFS.

BALANCE SHEET PRESENTATION OF CEDED REINSURANCE

U.S. GAAP requires, due to limited rights to offset assets and liabilities, that liabilities be presented gross on the balance sheet with a separate asset for anticipated ceded reinsurance recoveries. SAP

[200] Per SSAP No. 26R, SVO-identified investments refer to certain Exchange Traded Funds and Bond Mutual Funds that shall be treated as if they were bonds under the new guidance. For these investments, net asset value (NAV) is allowed as a practical expedient to fair value. The use of a systematic value is an irrevocable election. SSAP No.26R is effective December 31, 2017, but these investments shall be reported at their systematic value, if elected, starting on January 1, 2018.

requires the balance sheet presentation of liabilities on page 3 of the Annual Statement to be presented net of ceded reinsurance. Schedule P provides additional detail on the gross liabilities.

Using the Fictitious Insurance Company as our example, we have created the table below illustrating how the balance sheet presentation differs between GAAP and SAP for the line items associated with ceded reinsurance. The table shows how the SAP-basis balances illustrated correspond to the specific line items on the annual statement of the Fictitious Insurance Company (see Appendix I).

TABLE 103

| **GAAP basis** | | |
|---|---|---|
| | | |
| Assets: | | |
| Reinsurance Recoverables | | |
| On Paid Losses | $ 426,000 | |
| On Unpaid Losses | $ 10,142,000 | |
| Prepaid Reinsurance Premiums | $ 920,000 | |
| | | |
| Liabilities: | | |
| Reserve for Losses and Loss Adjustment Expenses | $ 61,699,000 | |
| Ceded Reinsurance Premium Payable (Net of Ceded Commission) | $ 440,000 | |
| Unearned Premium Reserve | $ 12,815,000 | |
| | | |
| **SAP basis** | | |
| | | AS Line |
| Assets: | | Page 2 |
| Reinsurance Recoverables | | |
| On Paid Losses | $ 426,000 | 16.1 |
| | | |
| Liabilities: | | Page 3 |
| Reserve for Losses and Loss Adjustment Expenses | $ 51,557,000 | 1+3 |
| Ceded Reinsurance Premium Payable (Net of Ceded Commission) | $ 440,000 | 12 |
| Unearned Premium Reserve | $ 11,895,000 | 9 |
| Provision for Reinsurance | $ 283,000 | 16 |

CEDED REINSURANCE — PROSPECTIVE AND RETROACTIVE

The accounting for reinsurance depends on whether the reinsurance contract covers future or past insured events. The latter is called retroactive reinsurance and the former prospective reinsurance. The difference between SAP and U.S. GAAP for prospective reinsurance is limited to balance sheet presentation. illustrated in Table 103 above.

Retroactive reinsurance, however, has a different measurement approach for SAP compared to U.S. GAAP. SAP requires that undiscounted ceded reserves be recorded as a negative write-in liability. This leaves Schedule P unchanged, i.e., gross of the retroactive reinsurance. Any gain to the ceding company (excess of the negative write-in liability over the consideration paid for the reinsurance) is treated as write-in gain in other income and restricted as special surplus until the actual paid reinsurance recovery is in excess of the consideration paid.

U.S. GAAP requires ceded reserves to be recorded as a reinsurance asset. Any gain is deferred, thereby resulting in no immediate income or surplus benefit. The deferred gain is amortized using the interest method if the timing of the payments under the reinsurance treaty are reasonably estimable. Otherwise the proportion of actual recoveries to total estimated recoveries (the recovery method) determines the amount of amortization.

STRUCTURED SETTLEMENTS

To settle certain liability claims, an insurance company may purchase an annuity from a life insurance company with the beneficiary being the original claimant. For the case where a full release is signed by the claimant upon agreement to settle for the future annuity payments, the GAAP and SAP treatments are the same. The purchase price of the annuity is recorded as a paid loss and the claim is closed.

In the situation where a full release is not provided to the insurance company by the claimant, the insurance company is still contingently liable. In this situation, U.S. GAAP treats the structured settlement like a reinsurance contract, thus retaining the loss reserve and establishing an equivalent reinsurance recoverable. The accounting under SAP is the same as for structured settlements where a release is obtained, but it requires that the insurance company disclose the amount of these contingent liabilities in the Notes to Financial Statements.

ANTICIPATED SALVAGE AND SUBROGATION

In Schedule P reserves can be stated either gross or net of anticipated salvage and subrogation. If the reserves are stated net, column 23 in Schedule P discloses the amount of anticipated salvage and subrogation. This election appears to be a residual effect of pre-codification standards where certain states required reserves to be stated gross of anticipated salvage and subrogation.

Under U.S. GAAP, estimated realizable salvage and subrogation is subtracted from the unpaid loss estimates.

DISCOUNTING OF LOSS RESERVES

Statement of Statutory Accounting Principles (SSAP) 65 indicates that except for certain workers compensation and long-term disability claims with fixed and reasonably determinable payments, property/casualty loss reserves cannot be discounted. For those reserves that are tabular based, SSAP 65 is silent on the permitted discount rate. Most state regulations are also silent, but typically 3.5% per annum is used. For non-tabular reserves SSAP 65 recommends that the discount rate should be determined in accordance with Actuarial Standard of Practice 20, but capped at the lesser of:

1. If the company's statutory invested assets are at least equal to the total of all policyholder reserves, the company's net rate of return on statutory invested assets minus 1.5%; otherwise, the company's average net portfolio yield rate minus 1.5%

2. The current yield to maturity on a U.S. Treasury debt instrument with a duration that is consistent to the payment of the claims

For U.S. GAAP, ASC 944-40-S30-1 refers to an SEC staff bulletin that indicates it is permissible to apply the same discount calculated under SAP for U.S. GAAP purposes. It also indicates that an alternative discount rate could be used as long as the alternative rate "is reasonable on the facts and circumstances applicable to the registrant at the time the claims are settled." This SEC staff bulletin was prepared in response to an inquiry from a registrant asking if it was permissible to discount for U.S. GAAP purposes based on the company's historical investment yield.

GOODWILL UNDER PURCHASE ACCOUNTING

Under SAP, a business combination is accounted for as either a statutory purchase or a statutory merger. Business combinations that create parent-subsidiary relationships are accounted for as a statutory purchase. Alternatively, transactions are accounted for as a statutory merger if equity of one entity is issued in exchange for equity of the second entity, with the equity in the second entity then canceled. Prospectively, only one entity exists. Under statutory purchase accounting, the assets and liabilities of the acquired entity are recorded at their historical carrying (i.e., book) values. Goodwill is calculated as the difference between the purchase price and the net book value of the acquired entity. Goodwill is limited in the aggregate to 10% of the acquiring entity's capital and surplus (adjusted to exclude any net positive goodwill, electronic data processing equipment and operating system software, and net DTAs) for its most recently filed Annual Statement. Goodwill is amortized to unrealized capital gains and losses over the period in which the acquiring entity benefits economically, not to exceed 10 years.

Under U.S. GAAP, all business combinations are accounted for using purchase accounting, which requires all assets and liabilities of the acquired entity to be recorded at fair value (including all identifiable intangible assets). Goodwill represents the difference between the purchase price and the fair value of the net assets of the acquired entity. Goodwill is not amortized but is evaluated for possible impairment on a regular basis.

For example, Company XYZ acquired Company ABC (an insurance entity) on January 1, 2018. We assumed that the purchase price of Company ABC was $3 million, the fair value of Company ABC's net assets was $2 million, and the statutory surplus amount of Company ABC was $1.5 million. On January 1, 2018, we calculated that under SAP the goodwill recorded should be $1.5 million, the difference between the purchase price and the statutory surplus of Company ABC, and that under GAAP the goodwill recorded should be $1 million, the difference between the purchase price and the fair value of the net assets. On December 31, 2018, we calculated that under SAP the goodwill recorded should be reduced to $1.35 million after amortization (assuming the goodwill should be amortized over 10 years) and that under GAAP the goodwill recorded should remain at $1 million as no impairment was identified.

In the case of a negative goodwill, under SAP, it should be recorded as a contra-asset and be amortized to unrealized capital gains and losses over a period not to exceed 10 years; under GAAP, the negative goodwill should first offset the book value of the acquired non-current assets (plant, property, equipment, intangibles, and other non-current and non-monetary assets) and the residual negative goodwill recorded as a bargain purchase gain through the income statement.

Due to these different approaches in calculating goodwill, the initial amounts of goodwill under SAP and GAAP can be significantly different. Chapter 23. *Fair Value Under Purchase GAAP* will discuss further the concept of fair value in business combinations.

SEC REPORTING

Companies with publicly traded securities are required to file quarterly (Form 10-Q) and annual (Form 10-K) financial reports with the SEC. In addition, companies are required to file a Form 8-K on an ad hoc basis for material events as they occur. The triggering events requiring the filing of an 8-K include a change in the principal officers or directors of the company, a change in the company's certified accountant, and entering or terminating a material definitive agreement.

These filings provide investors with quantitative and qualitative information about a company's business and operations, allowing investors to make informed and timely decisions. The key contents by section of a 10-K include:

- Part I — Business description, risks factors, unresolved comments from SEC staff, properties, and legal proceedings
- Part II — Financial statements and supplementary data, selected financial data, management's discussion and analysis of financial condition and results of operations, and controls and procedures
- Part III — Directors and executive officers of the company, executive compensation, securities ownership by certain beneficial owners and management, certain relationships and related transactions, and the fees of the principal accountant
- Part IV — Reports, exhibits and schedules from 8-Ks filed during the reporting period.

The 10-Q is an abbreviated form of the 10-K.

SEC reporting requirements for all registrants are mainly outlined in two regulations.

1. Regulation S-X — Form and Content of Financial Statements
2. Regulation S-K — Integrated Disclosure Rules

Regulation S-X contains general instructions to all companies around the composition and presentation of financial statements. Specifically, article seven provides detailed rules around the form and content of financial statement data and schedules of insurance companies. Many of these requirements are also

required under GAAP. In particular, article seven requires the insurance company to state in the Notes to Financial Statements the:

- Basis of assumptions, including interest rates, for determining discounted liabilities
- Deferred acquisition costs amortized in the period
- Statutory stockholders equity and net income or loss

In addition, Regulation S-X requires certain schedules to be included in each registrant's 10-K form (their annual filing). These schedules include:

- Schedule III — Supplementary insurance information for each reporting segment, of which the following is required to be reported:
    - Deferred policy acquisition costs
    - Unpaid loss and loss expenses
    - Unearned premiums
    - Other policy claims payable
    - Premium revenue
    - Net investment income
    - Losses and loss expenses
    - Amortization of deferred policy acquisition costs
    - Other operating expenses
    - Premiums written
- Schedule IV — Reinsurance including amounts ceded and assumed
- Schedule VI — Supplemental information concerning property/casualty insurance operations that includes the same information as Schedule III in total across fiscal years for the current fiscal year and the two years prior

Following are examples of Schedules III (Table 104), IV (Table 105) and VI (Table 106) from a 2018 10-K filing for a company we are calling "Fictional Insurance Company".

TABLE 104

**10-K Schedule III**
**Fictional Insurance Company**
**Supplementary Insurance Information**
**2016—2018**
**($ in millions)**

| Segment | Deferred Acquisition Costs | Claims and Claim Adjustment Expense Reserves | Unearned Premiums | Earned Premiums | Net Investment Income (1) | Claims and Claim Adjustment Expenses | Amortization of Deferred Acquisition Costs | Other Operating Expenses (2) | Net Written Premiums |
|---|---|---|---|---|---|---|---|---|---|
| **2018** | | | | | | | | | |
| Business Insurance | 430 | 21,132 | 2,887 | 5,965 | 1,075 | 448 | 956 | 1,024 | 5,972 |
| Financial, Professional and International Insurance | 175 | 3,611 | 1,076 | 1,671 | 218 | 783 | 318 | 341 | 1,633 |
| Personal Insurance | 336 | 2,300 | 1,884 | 3,996 | 223 | 3,340 | 768 | 478 | 4,078 |
| Total – Reportable Segments | 940 | 27,042 | 5,846 | 11,632 | 1,516 | 8,571 | 2,041 | 1,843 | 11,684 |
| Other | – | 35 | – | – | – | – | – | 233 | – |
| Consolidated | 940 | 27,077 | 5,846 | 11,632 | 1,516 | 8,571 | 2,041 | 2,076 | 11,684 |
| **2017** | | | | | | | | | |
| Business Insurance | 424 | 21,231 | 2,825 | 5,669 | 1,135 | 3,425 | 921 | 1,003 | 5,717 |
| Financial, Professional and International Insurance | 185 | 3,686 | 1,126 | 1,747 | 231 | 895 | 322 | 320 | 1,691 |
| Personal Insurance | 329 | 2,222 | 1,800 | 3,870 | 244 | 2,636 | 759 | 457 | 3,985 |
| Total – Reportable Segments | 938 | 27,139 | 5,751 | 11,286 | 1,611 | 6,956 | 2,002 | 1,779 | 11,393 |
| Other | – | 36 | – | – | – | – | – | 219 | – |
| Consolidated | 938 | 27,175 | 5,751 | 11,286 | 1,611 | 6,956 | 2,002 | 1,998 | 11,393 |
| | | | | | | | | | |
| **2016** | | | | | | | | | |
| Business Insurance | 417 | 22,171 | 2,833 | 5,776 | 1,002 | 3,179 | 935 | 1,035 | 5,741 |
| Financial, Professional and International Insurance | 194 | 3,790 | 1,199 | 1,755 | 238 | 920 | 328 | 305 | 1,730 |
| Personal Insurance | 315 | 2,227 | 1,688 | 3,748 | 222 | 2,435 | 746 | 413 | 3,765 |
| Total – Reportable Segments | 926 | 28,188 | 5,719 | 11,279 | 1,462 | 6,534 | 2,008 | 1,753 | 11,235 |
| Other | – | 38 | – | – | – | – | – | 221 | – |
| Consolidated | 926 | 28,226 | 5,719 | 11,279 | 1,462 | 6,534 | 2,008 | 1,974 | 11,235 |

(1) See note 2 to the consolidated financial statements for discussion of the method used to allocate net investment income and invested assets to the identified segments.
(2) Expense allocations are determined in accordance with prescribed statutory accounting practices. These practices make a reasonable allocation of all expenses to those product lines with which they are associated.

TABLE 105

**10-K Schedule IV**
**Fictional Insurance Company**
**Valuation and Qualifying Accounts**
**(USD in millions)**

| | Balance beginning of period | Charged to costs and expenses | Charged to other accounts (1) | Deductions (2) | Balance at end of period |
|---|---|---|---|---|---|
| **2018** | | | | | |
| Reinsurance recoverables | 191 | – | – | 9 | 182 |
| Allowance for uncollectible: | | | | | |
| Premiums receivable from underwriting activities | 61 | 12 | – | 29 | 44 |
| Deductions | 19 | 3 | – | 2 | 21 |
| **2017** | | | | | |
| Reinsurance recoverables | 275 | – | – | 84 | 191 |
| Allowance for uncollectible: | | | | | |
| Premiums receivable from underwriting activities | 68 | 24 | (1) | 31 | 61 |
| Deductions | 26 | (4) | – | 2 | 19 |
| **2016** | | | | | |
| Reinsurance recoverables | 325 | – | – | 50 | 275 |
| Allowance for uncollectible: | | | | | |
| premiums receivable from underwriting activities | 68 | 32 | 1 | 33 | 68 |
| Deductions | 35 | (2) | – | 7 | 26 |

(1) Charged to claims and claim adjustment expenses in the consolidated statement of income.
(2) Credited to the related asset account.

TABLE 106

**10-K Schedule VI**
**Fictional Insurance Company**
**Supplementary Information Concerning Property-Casualty Insurance Operations (1)**
**2016–2018**
**(USD in millions)**

| Affiliation with Registrant (2) | Deferred Acquisition Costs | Claims and Claim Adjustment Expense Reserves | Discount From Reserves for Unpaid Claims (3) | Unearned Premiums | Earned Premiums | Net Investment Income | Claims and Claim Adjustment Expenses Incurred Related to: | | Amortization of Deferred Acquisition Costs | Paid Claims and Claims and Adjustment Expenses | Net Written Premiums |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Current Year | Prior Year | | | |
| 2018 | 940 | 27,042 | 629 | 5,846 | 11,632 | 1,516 | 8,919 | (443) | 2,041 | 8,112 | 11,684 |
| 2017 | 938 | 27,139 | 626 | 5,751 | 11,286 | 1,611 | 7,610 | (746) | 2,002 | 7,213 | 11,393 |
| 2016 | 926 | 28,188 | 612 | 5,719 | 11,279 | 1,462 | 7,204 | (763) | 2,008 | 6,803 | 11,235 |

(1) Excludes accident and health insurance business.
(2) Consolidated property/casualty insurance operations.
(3) For a discussion of types of reserves discounted and discount rates used, see Item 1, Business, Discounting.

Regulation S-K contains the requirements for the nonfinancial statement portions of the 10-K filing. In conjunction with the Securities Act Industry Guides, Guide 6: Disclosures Concerning Unpaid Claims and Claim Adjustment Expenses of Property-Casualty Insurance Underwriters, the following items are required to be disclosed:

- A tabular analysis of changes in aggregate reserves for unpaid claims and claim adjustment expenses for each of the latest three one-year periods
- Method for estimating the effects of inflation, implicitly or explicitly
- A reconciliation between statutory and GAAP reserves for unpaid claims and claim adjustment expenses, including an explanation of the key differences
- The amount of discount embedded in the GAAP reserves for unpaid claims, including the pre-tax income effect of discount accrued and of discount amortized

The following in an example of the tabular analysis of changes in aggregate reserves.

TABLE 107

**10-K Notes to Consolidated Financial Statements**
**Fictional Insurance Company**
**Insurance Claim Reserves**
**Reconciliation of beginning and ending property casualty reserve balances for claims and claim adjustment expenses**
**(USD in millions)**

| At and for the year ending December 31 | 2018 | 2017 | 2016 |
|---|---|---|---|
| Claims and claim adjustment expense reserves at beginning of year | 27,139 | 28,188 | 29,026 |
| Less reinsurance recoverables on unpaid losses | 5,941 | 6,629 | 7,272 |
| Net reserves at beginning of year | 21,198 | 21,559 | 21,755 |
| Estimated claims and claim adjustment expenses for claims arising in the current year | 8,919 | 7,610 | 7,204 |
| Estimated decrease in claims and claim adjustment expenses for claims arising in prior years | (443) | (746) | (763) |
| Total increases | 8,476 | 6,864 | 6,441 |
| Claims and claim adjustment expense payments for claims arising in: | | | |
| Current year | 4,082 | 3,133 | 2,843 |
| Prior years | 4,030 | 4,080 | 3,959 |
| Total payments | 8,112 | 7,213 | 6,803 |
| Unrealized foreign exchange (gain) loss | (14) | (13) | 166 |
| Net reserves at end of year | 21,548 | 21,198 | 21,559 |
| Plus reinsurance recoverables on unpaid losses | 5,494 | 5,941 | 6,629 |
| Claims and claim adjustment expense reserves at end of year | 27,042 | 27,139 | 28,188 |

Table 107 shows for each of the last three years the beginning reserve from the prior year-end, the provision for reserve development in the calendar year (ultimate incurred losses from accidents occurring in the current year plus change in ultimate incurred losses on accidents from prior fiscal periods), paid losses and the ending reserve. The beginning reserve plus the provision for reserve development minus paid losses equals the ending reserve. If the company makes an acquisition, this would be reflected in the beginning reserve balance.

Accounting Standards Update (ASU) 2015-09

In the early 2010s, the FASB explored a joint project with the International Accounting Standards Board (IASB) to update insurance accounting. Due to a lack of agreement between the Boards, the FASB decided instead to make targeted improvements to the current accounting under U.S. GAAP. Meanwhile the IASB went on to developing IFRS 17 (See Chapter 24).

The FASB initially proposed that short duration contract liabilities be discounted, to allow investors the ability to understand the present value of the liabilities, but with no adjustment for risk. Insurance companies and the analyst community provided feedback indicating that any

discount would immediately be unwound by analysts, to be replaced with what they believe is the appropriate amount of discount. Instead the analysts requested additional disclosures be developed to allow them more insight to develop their own discount and to judge management's ability to establish the appropriate reserve estimates over time.

The resulting guidance that was issued in ASU 2015-09 added several new disclosures to U.S. GAAP financial statements for short duration insurance contracts. The key elements of ASU 2015-09 are as follows:

- The reserve roll-forward table required annually by the SEC (see Table 107) was codified into U.S. GAAP and required quarterly for all U.S. GAAP financial statements rather than just annually for SEC public filers.
- Accident year triangles of paid and ultimate loss and ALAE for up to 10 years on a net of reinsurance basis. These triangles were required to be reconciled in another schedule to the carried reserves.
- Current reported claim frequencies and current net loss and ALAE IBNR by accident year on the same level of aggregation as the triangles.
- A description of the methodologies used to estimate the loss and ALAE IBNR.
- The average annual payout of ultimate incurred claims based on the paid triangles and current ultimate incurred loss and ALAE.
- In the aggregate, a description of any significant changes in the methodology used to estimate the IBNR or the reported claim frequencies.

These additional disclosures were required to be presented at a level such that "useful information is not obscured by either the inclusion of a large amount of insignificant detail or the aggregation of items that have significantly different characteristics." The exceptions to this requirement were the quarterly roll-forwards and the description of significant changes in methodology, both of which are only required in the aggregate.

While there are similarities to the triangles in Schedule P for some of these disclosures, there are also important differences. Some of these differences include:

- These U.S. GAAP triangles require ALAE, not DCC. For example, this can drive significant differences if claims are handled by external adjustors, whose costs would fall under ALAE for U.S. GAAP as long as they can be allocated to a specific claim, but A&O expense for SAP.
- The level of disclosure for the U.S. GAAP triangles is principle based, while SAP has defined lines of business.
- Schedule P, even when presented for a group, only contains business written through U.S. entities for an insurance group. The U.S. GAAP disclosures may require business written globally, which can lead to significant foreign currency exchange issues.

- Under U.S. GAAP, the IBNR and reported claim frequency are as of the financial reporting date, and not in triangle form. The former limits the ability for a user of the financial statements to obtain and use case incurred data. The latter, while meant to help the user understand the severities in the underlying business, ignores that incurred amounts for reported claims tend to develop after being reported and claims reported later tend to have higher severities. Therefore, care must be taken by users in interpreting these disclosures.

The American Academy of Actuaries published a white paper on the considerations in implementing ASU 2015-09 in December 2016. In developing the white paper, the authors consulted with the AICPA's insurance expert panel and the SEC. Therefore, the reader is urged to read the white paper for further information.

https://www.actuary.org/sites/default/files/files/publications/FASB_SDC_Disclosures_White_Paper_120916.pdf

## CHAPTER 23. FAIR VALUE UNDER PURCHASE GAAP

When an entity agrees to buy another entity, under U.S. Generally Accepted Accounting Principles (GAAP) the purchaser is required to state at fair value the assets and liabilities of the purchased entity. This accounting for business combinations is often referred to as Purchase GAAP (P-GAAP). As part of the P-GAAP process, certain intangible assets are included that would not typically be recognized and measured under U.S. GAAP. After the fair value of the assets and liabilities is determined, the implied capital (fair value assets minus fair value liabilities) is compared to the purchase price. If the implied capital is less than the purchase price of the purchased entity, the difference is defined to be goodwill and an asset equivalent to that amount is established. If the implied capital is greater than the purchase price of the purchased entity, the difference is immediately recognized as an operating gain into income.

As actuaries we may become involved in the estimation of certain balance sheet items on a fair value basis. In particular we may be asked to estimate the fair value of loss and LAE reserves and to estimate the value of business in-force (VBIF).

FAIR VALUE OF LOSS AND LAE RESERVES

Fair value under U.S. GAAP is defined in Accounting Standards Codification (ASC) 820-10-05 as “the price at which an orderly transaction to sell the asset or to transfer the liability would take place between market participants at the measurement date under current market conditions.” Such a value could be obtained by a market quote if there were a deep and liquid market for insurance liabilities. As there is no such market, the approach is “mark-to-model,” which entails determining the market value through an estimation process rather than using an observable market price. Recent actuarial literature supports an approach to estimating fair value of insurance liabilities based on three components. These components are:

1. The expected value of the nominal future cash flows related to liabilities incurred, for loss and LAE, as of the date of the transaction.
2. The reduction in those cash flows for the time value of money at a risk-free rate plus an element for the illiquid nature of the liabilities. This discount rate is meant to reflect the characteristics of the underlying liabilities.
3. A risk adjustment to compensate an investor for bearing the risk associated with the liabilities. This is meant to reflect the expected net present value of profit that an investor would demand in return for the risk inherent within the liabilities.

We will separately consider each in our example below, basing the expected value of the cash flows on what we deem to be a reasonable estimate of unpaid claims as of the sale date and the associated future payout pattern (first component), and the current risk-free rate matched to the duration of those liabilities plus an adjustment for illiquidity (second component). For the third component of fair value, the risk adjustment, we use what is commonly referred to as the “cost of capital approach.” This approach estimates the amount of capital required to support the reserves at each future evaluation

date. The required return on a pretax basis in excess of the risk-free rate plus illiquidity adjustment is applied to this amount to calculate the value of the excess return expected by the investor in that future period. These values are in turn discounted to present value. The sum of the present value of excess returns from each future period is considered the risk margin.

The first component, expected nominal cash flows, can be derived from the current recorded reserve if management's best estimate is indeed an expected value that has no obvious inherent bias. There are two common ways to establish the cash flows by line of business from the nominal reserves. The first is to use the payout pattern based on the loss reserve development that the actuary would have selected in the course of his or her review of the reasonableness of management's recorded reserve. The second approach is to utilize the implied pattern based on the ratios of paid loss to ultimate loss by accident year. This latter approach may require more smoothing depending on the methods used in selecting ultimate losses and the stability, yet decreasing values, of incurred but not reported (IBNR) to case reserve ratios.

The second component is the amount of discount. Once the cash flows are estimated, the discounting calculation is fairly straightforward provided the rate is given. Given the third component is an explicit risk margin, the interest rate should reflect only the characteristics of the liability not related to the underlying risk in the outcomes for the purchasing entity. This is effectively the risk-free rate plus an element for the illiquidity of the liability, typically less than 100 basis points.

The risk-free rates are typically observed by referencing the U.S. Treasury Daily Yield Curve for the evaluation date of study, for liabilities settled in U.S. dollars. The liquidity/illiquidity premium (the terms "liquidity" and "illiquidity" are used interchangeably) is not readily available or typically understood. The need for an illiquidity premium is much easier to initially comprehend when considered from an asset perspective. Two assets with identical expected cash flows and no difference in the risk associated with those cash flows would be expected to be valued the same. But what if one was publicly listed and readily tradable, while the other is privately held? In this situation the ability to readily trade the asset would result in a lower discount rate being applied to the tradable asset's future cash flows than that of the privately held asset. The difference in the discount rates is the illiquidity premium for the privately held asset.

From a liability perspective, many find it hard to fathom why a liability that is less liquid should be lower in value than a liability that is liquid. It is easier to understand by considering the asset transferred to support the liability by the seller. The less liquid the liability is, the greater the opportunity for the purchaser of the liability to utilize the asset for their own gain until the liability comes due. This opportunity cost results in a greater discount for the seller of the liability, i.e., a higher discount rate. How to derive the illiquidity premium is an active debate at the time of writing and beyond the scope of this study material.

The third and final component of the fair value of the loss reserves is the risk adjustment. The most logical approach to calculating a risk adjustment for an estimate that is meant to represent a market-

based valuation is a cost of capital. The cost of capital approach is simply the present value of the future returns on capital that an investor would require for bearing the risk in the expected cash flows. The basic formula for the risk adjustment is:

$$\text{Risk adjustment} = (R - i)\sum_{t=0}^{\infty}\frac{C_{t\,to\,t+1}}{(1+i)^{t+1}}$$

Where:

- R = pretax required return on capital by the capital provider
- i = risk-free rate of return plus an illiquidity premium
- t = time
- $C_{t\,\text{to}\,t+1}$ = average capital carried over time t and t+1 to support the liability

The pretax required return can be approximated from the post-tax weighted average cost of capital that is typically produced by valuation experts performing the P-GAAP work on other intangible assets. The capital at any time t could be derived from using a suitable benchmark of the required capital for a hypothetical market participant based on Risk-Based Capital, S&P's capital model or Best's Capital Adequacy Ratio model.

As an example, we shall calculate the fair value of the loss and loss adjustment expense (LAE) reserves for the homeowners/farmowners line of business from Fictitious' Annual Statement. In performing the calculation, we have assumed the following:

- The recorded reserve of $1.457 million is a mean estimate of the expected future cash flows, i.e., no margin is present in management's best estimate.
- The appropriate payout pattern of the loss reserves, with some slight smoothing, can be derived from the ultimates in each accident year divided by the paid losses in each accident year[201].
- The discount rates are the U.S. Treasury yield curve as of the valuation date plus an adjustment of 35 basis points for the illiquidity premium.
- The payments are made halfway through each future period.
- The required capital ratio is 20.1% of the unpaid claim estimates in each future period and is applied to the average amount outstanding over the period to estimate the required capital.
- The cost of capital is 10%, which is reduced by the discount rate associated with the average duration of capital to derive the risk cost of capital of 9.7%, (R-i) in the above formula.
- The return on capital is paid at the end of each future period.

[201] Note the term "payout pattern" is used interchangeably by actuaries as either the ratio of paid losses to ultimate loss ("percent paid") or the ratio of ultimate loss to paid loss (which is equivalent to a paid age-to-ultimate factor).

TABLE 108

**Fictitious Insurance Company**
**Homeowners/Farmowners**
**Fair Value of Loss and LAE Reserves — Net**
**As of December 31, 2018**
**(U.S.D in 000s)**

| | | | Anticipated Loss Payments By Payment Period | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
| Payments in Period | (1) | 1,457 | 879 | 261 | 104 | 112 | 38 | 27 | 7 | 8 | 9 | 11 |
| Payment Duration | (2) | | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 |
| Discount Rate | (3) | | 0.095% | 0.210% | 0.336% | 0.481% | 0.711% | 0.973% | 1.231% | 1.463% | 1.633% | 1.822% |
| PV of Payment | (4) | 1,446 | 878 | 260 | 104 | 110 | 37 | 25 | 7 | 7 | 8 | 10 |
| Undiscounted Future Payments | (5) | | 1,457 | 578 | 317 | 213 | 101 | 62 | 36 | 29 | 21 | 11 |
| Required Capital Ratio | (6) | | 0.201 | 0.201 | 0.201 | 0.201 | 0.201 | 0.201 | 0.201 | 0.201 | 0.201 | 0.201 |
| Average Required Capital | (7) | | 205 | 90 | 53 | 32 | 16 | 10 | 7 | 5 | 3 | 1 |
| Risk Cost of Capital | (8) | | 0.097 | 0.097 | 0.097 | 0.097 | 0.097 | 0.097 | 0.097 | 0.097 | 0.097 | 0.097 |
| Cost of Capital in Period | (9) | | 20 | 9 | 5 | 3 | 2 | 1 | 1 | 0 | 0 | 0 |
| Duration | (10) | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Discount Rate | (11) | | 0.155% | 0.285% | 0.395% | 0.585% | 0.865% | 1.095% | 1.385% | 1.546% | 1.725% | 1.925% |
| Associated Risk Margin | (12) | 40 | 20 | 9 | 5 | 3 | 2 | 1 | 1 | 0 | 0 | 0 |
| **Total Fair Value Reserve** | (13) | 1,486 | | | | | | | | | | |

(1) Determined from reserve and payout pattern
(2) Payments assumed to occur on average halfway through the period
(3) From yield curve
(4) = (1) / [1 + (3)] ^ (2)
(5) Sum of remaining amounts from (1)
(6) Selected
(7) = Average of (5) from t and t+1 x (6)
(8) Selected
(9) = (7) x (8)
(10) Capital is assumed to be held until the end of the period
(11) From yield curve
(12) = (9) / [1 + (11)] ^ (10)
(13) = Total (4) + Total (12)

The resulting fair value for this line of business differs only slightly from the recorded reserve and is likely within the bounds of the level of accuracy for determining a reasonable reserve estimate. However, this is due to several factors, some of which are offsetting. The discount is minimal in this case due to the relatively short payout pattern of the line of business and the low level of interest rates on U.S. treasuries as of December 31, 2018.

The shorter payout pattern also affects how long you need to hold the capital. The less time the capital is held, the lower the future capital charges that can accumulate. In addition, in this case the line of business is not one that is associated with a large degree of reserve variability. Therefore, the required capital ratio is fairly small, which decreases the absolute return that a third party would demand to acquire the liability. Finally, working in the opposite direction, there is the effect of discount rates on the risk margin. The low discount rates effectively increase the risk margin as the present value of the future returns on capital is higher.

In this example, you can see that the fair value of a liability can be affected by many moving pieces that can require an actuary to dig into the calculation to be able to explain differences between lines of business or between evaluation dates.

Not all believe that cost of capital is the right approach to producing a risk adjustment. Australian Prudential Regulation Authority requires reserves to be recorded at or about the 75$^{th}$ percentile of the discounted distribution of outcomes. In Canada, property/casualty actuaries judgmentally select the risk adjustment for loss reserves as a percentage value up to 20%. In addition, one could use a tail value at risk (T-VaR) approach. While the cost of capital can be calibrated to the pre-tax return investors require and the amounts of capital typically held for a risk, these other methods lack any calibration to the market. This makes it difficult to assert that the assumption of a certain confidence level, T-VaR or percentage load is required by a market participant in an arm's-length transaction.

VALUE OF IN-FORCE

Under P-GAAP, the fair value of deferred acquisition costs (DAC) is zero, given its lack of ability to generate future cashflows. In its place an asset is established based on the VBIF. This is not, as some companies assume, equivalent to the DAC asset. The VBIF is affected by the relationship of discount to risk adjustment on the liabilities expected to be incurred in connection with the unearned premium reserves, the amount of acquisition costs that were covered by the premium but previously expensed, and the estimated profitability of the unearned premium reserves. A shortcut technique to calculating the VBIF is to state at fair value the liabilities expected to be incurred in connection with the unearned premium reserves and subtract them from the unearned premium to obtain the implied VBIF. The steps to obtain a fair value of these liabilities are identical to those in obtaining the fair value of the loss reserves but with some additional steps. The expected and unbiased loss ratio is required to estimate the nominal expected liabilities from the unearned premium, and the cash flows in the first year should include an amount for policy maintenance costs. Consideration should also be given to the additional risk, event risk, present during the coverage period which can be reflected with a higher capital charge during that period if using a cost of capital approach to estimate a risk adjustment.

## CHAPTER 24. INTERNATIONAL FINANCIAL REPORTING STANDARDS

International Financial Reporting Standards (IFRS) is a single set of global financial reporting standards issued by the International Accounting Standards Board (IASB). It was developed in the public interest as a high-quality set of general purpose standards that will provide users across borders and industries with transparent and comparable information. That is, they provide the world's integrated capital markets with a common language for financial reporting.

Most of the world's major economies permit or require the use of IFRS. The European Union, Canada, Hong Kong, and Australia are among the economies that use IFRS. At the time of writing, the Securities and Exchange Commission (SEC) in the U.S. does not allow domestic issuers of financial statements the ability to file using IFRS rather than U.S. Generally Accepted Accounting Principles (GAAP), but it currently permits foreign issuers to do so without reconciliation to U.S. GAAP.

In 2005, the IASB realized it was unable to issue a new standard for insurance contracts before IFRS was due to be implemented in the European Union. Consequently, under time constraints, the IASB issued an interim standard known as IFRS 4. IFRS 4 allowed entities to use a wide variety of accounting practices for insurance contracts, reflecting national accounting requirements and variations within the respective requirements. For instance, companies were allowed to continue to use their local GAAP but with minimum rules around that practice. However, the standard did not adequately reflect the true underlying financial position or performance of the insurance contracts as the contracts:

- Are accounted for differently across jurisdictions as national accounting requirements were allowed to be adopted;
- Often cover difficult-to-measure long term and complex risks, with uncertain outcomes;
- Are not typically traded in the market;
- May include a significant investment or deposit component – the amount that the insurer is liable to pay the policyholder regardless of whether the insured event occurs.

To address the issues above, in May 2017, the IASB issued IFRS 17 which was initially set to be effective on or after January 1, 2021, superseding IFRS 4. However, in 2018, the IASB voted to defer its effective date to January 1, 2022.

IFRS 17 establishes principles for the recognition, measurement, presentation and disclosure of insurance contracts. The objective is to:

a) Improve comparability between insurers
- Harmonization of insurance practices across jurisdictions
- New accounting framework to replace the various accounting treatments

b) Improve quality of financial information
- Inclusion of useful information in the financial statements
- Increase transparency on insurers' profitability.

SCOPE

IFRS 17 applies to contracts that are insurance contracts issued, reinsurance contracts held, and investment contracts with discretionary participation features. Similar to IFRS 4, it does not apply to insurance contracts in which the company is the policyholder, with the exception that the contracts are reinsurance contracts.

> The new standard retains the IFRS 4 definition of an insurance and reinsurance contract, which is "a contract under which one party (the insurer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder."

LEVEL OF AGGREGATION

IFRS 17 provides a consistent framework for accounting for all insurance contracts issued. A company applies the requirements of IFRS 17 to a group of insurance contracts rather than on a contract-by-contract basis. In grouping insurance contracts, a company is required to identify portfolios of contracts and divide each portfolio into:

a) A group of contracts that are onerous at initial recognition;

b) A group of contracts, at initial recognition, that have no significant possibility of becoming onerous subsequently; and

c) A group of remaining contracts

Contracts issued more than one year apart can't be grouped into the same group.

MEASUREMENT MODEL

The standard introduced a new measurement model referred to as the General Model with the measurement objective of fulfillment value for insurance contracts. Two variants of the General Model were also defined by the standard, the Premium Allocation Approach ("PAA") and the Variable Fee Approach ("VFA").

General Model

The General Model is the default model in IFRS 17. Under this model, insurance contracts are to be reported on the balance sheet as the total of:

a) Fulfillment cash flows – the current estimate of amounts that the insurer expects to collect from premiums and pay out for claims, benefits and expenses, including an adjustment for the timing and risk of those cash flows; and

b) Contractual service margin ("CSM") – the expected profit for providing future insurance coverage (i.e., unearned profit).

The fulfillment cash flows consist of the present value of future cash flows and a provision for risk adjustment. The risk adjustment component represents compensation that an insurer requires for bearing the uncertainty about the amount and timing of the cash flows that arise as it fulfills the insurance contract.

Upon initial recognition, the CSM is defined as the net difference between the fulfillment cash inflows and outflows, floored by zero. The CSM cannot be negative. If it is negative upon inception, the expected losses are to be recognized in the income statement immediately. The purpose of recognizing a positive initial CSM is to report expected profitability arising from the contract over time, reflecting the service to be provided.

The standard requires companies to update the fulfillment cash flows at each reporting date, using current estimates that are consistent with relevant market information. For instance, companies are to use current discount rates to measure insurance contracts. Using current discount rates, as opposed to historical rates (i.e., discount rates during contract inception) or a mix of rates, will reflect the characteristics of the cash flows arising from the insurance contract liabilities in a consistent manner across all companies. As such, changes in insurance obligations due to economic factors, i.e., interest rates, will be reflected in the financial statements in a timely way.

Premium allocation approach

The PAA is a simplification of the General Model. It is an option that insurers can elect to implement if the model is expected to produce results that would not differ materially from the General Model and if it doesn't contain any complex features. There is a safe harbor for contracts that have a coverage period of twelve months or less. Other contracts can be tested to allow them to use the PAA over the General Model.

The PAA splits the measurement of groups of insurance contracts into two pieces where needed, the liability for remaining coverage and the liability for incurred claims. The liability for remaining coverage is approximately equal to the unearned premium less any premium receivable and deferred acquisition costs.

The liability for incurred claims is measured using the fulfilment cashflows from the General Model. No CSM is required for this portion of the liability as the coverage from the contract has expired for this portion of the liability.

Variable Fee Approach

The VFA is based on the General Model but with additional features to account for contracts with direct participating features.

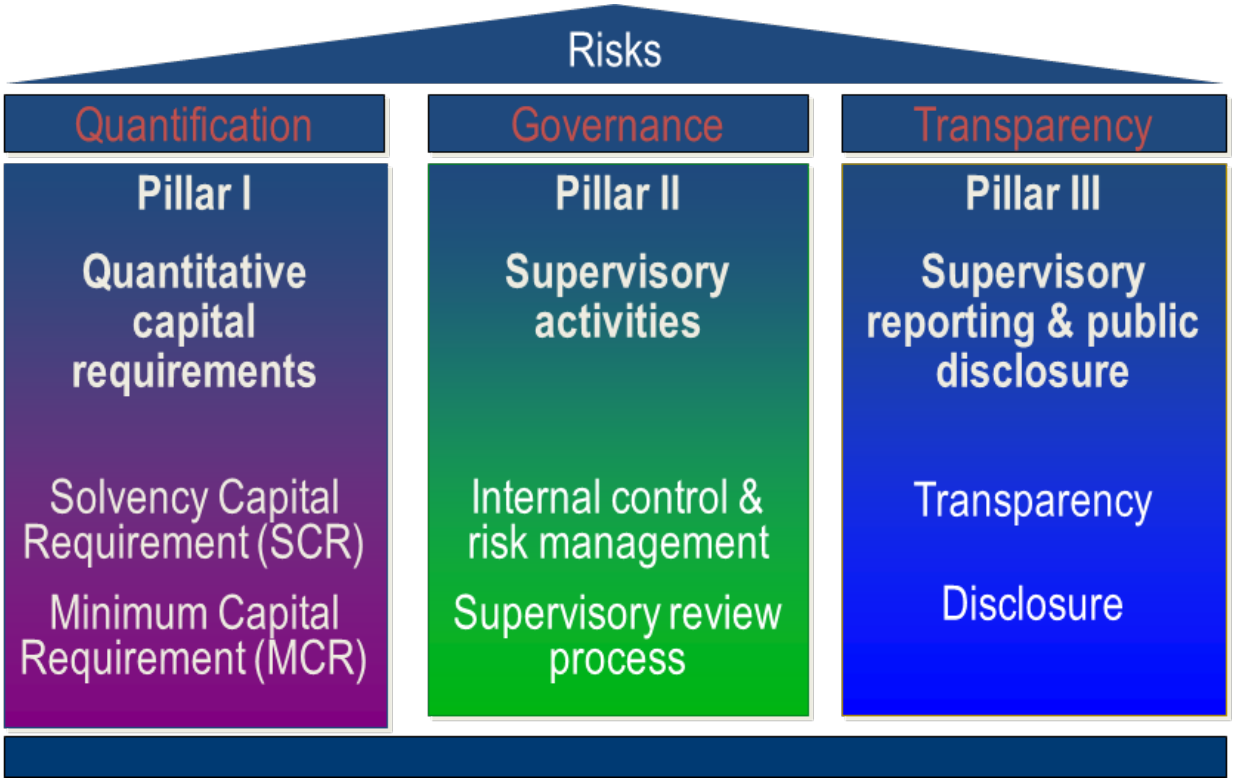
Overall, IFRS 17 and its basis for conclusions published by the IASB total 240 pages. It covers in-depth topics such as what is considered an insurance contract and therefore needs to be accounted for under the standard, the boundaries of such contracts, more specifics around the building blocks (fulfilment cashflows and CSM), the option to lock-in discount rates to avoid income statement volatility from mismatched accounting of assets, recognition of revenue, and required disclosures.

At the time of writing of this text, significant amounts of accounting and actuarial literature have been published on how to implement this complex standard. No doubt much more will be written in the coming years as the implementation date is reached. Those interested in reading more should first look to International Actuarial Note 100 that will be published by the International Actuarial Association during 2020.

## CHAPTER 25. SOLVENCY II

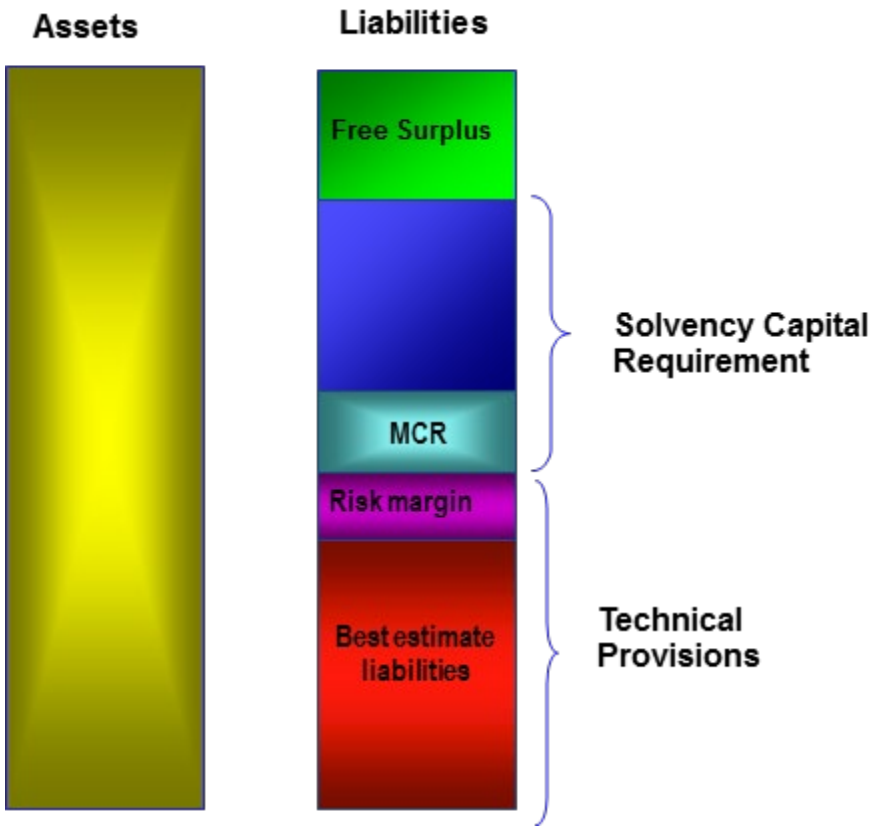
Solvency II is a principle-based insurance regulatory system governing how insurance companies are funded in the European Union. It links the required capital of insurance companies to their risk profile.

Solvency II came into effect on January 1, 2016. The new system is based on three pillars similar to those of Basel II. Those pillars are quantification, governance, and transparency.




PILLAR I — QUANTITATIVE CAPITAL REQUIREMENTS

Pillar I is focused on the quantitative aspect of Solvency II to obtain the solvency capital requirement (SCR) and minimum capital requirement (MCR). It also harmonized standards for the valuation of assets and liabilities. The measurement approach is summarized in the following diagram and is often referred to as the total balance sheet approach.




On the asset side of the balance sheet, non-insurance assets are recorded using the measurement approach under International Financial Reporting Standards (IFRS). Reinsurance assets are measured in the same way as insurance liabilities. On the liability side of the balance sheet, the technical provisions consist of the discounted best estimate of the liabilities and their associated risk margin. These are meant to represent the fair market value of the insurance liabilities, and although principles based, the approach to calculating them is fairly prescriptive. The best estimate of the liabilities is the expected value of the cash flows discounted using a risk-free rate; adjustments such as matching adjustment for illiquidity are available for long term liabilities. The risk-free discount rates are published by the European regulator on a monthly basis. The risk margin is calculated using a cost of capital method with the cost of capital above the risk-free rate (R-i from Chapter 23) equal to 6%.

Under Pillar 1 there are two capital requirements defined which are the Solvency Capital Requirement (SCR) and the Minimum Capital Requirement (MCR). The SCR and MCR are capital requirements that must be held in addition to the best estimate liabilities. SCR is the capital that should be held to ensure that the insurance company can meet its obligations to policyholders and beneficiaries with certain probability and should be set to a confidence level of 99.5% over a 12-month period i.e., a one-year 99.5% Value at Risk (VaR). A company whose capital falls below the SCR will be subject to regulatory intervention. If it falls even further below the MCR, the company will lose its license and will not be permitted to operate. Critics have noted that the one-year 99.5% VaR is not an adequate measure for bearing the risk to ultimate settlement. Solvency II requires consideration of recapitalization based on

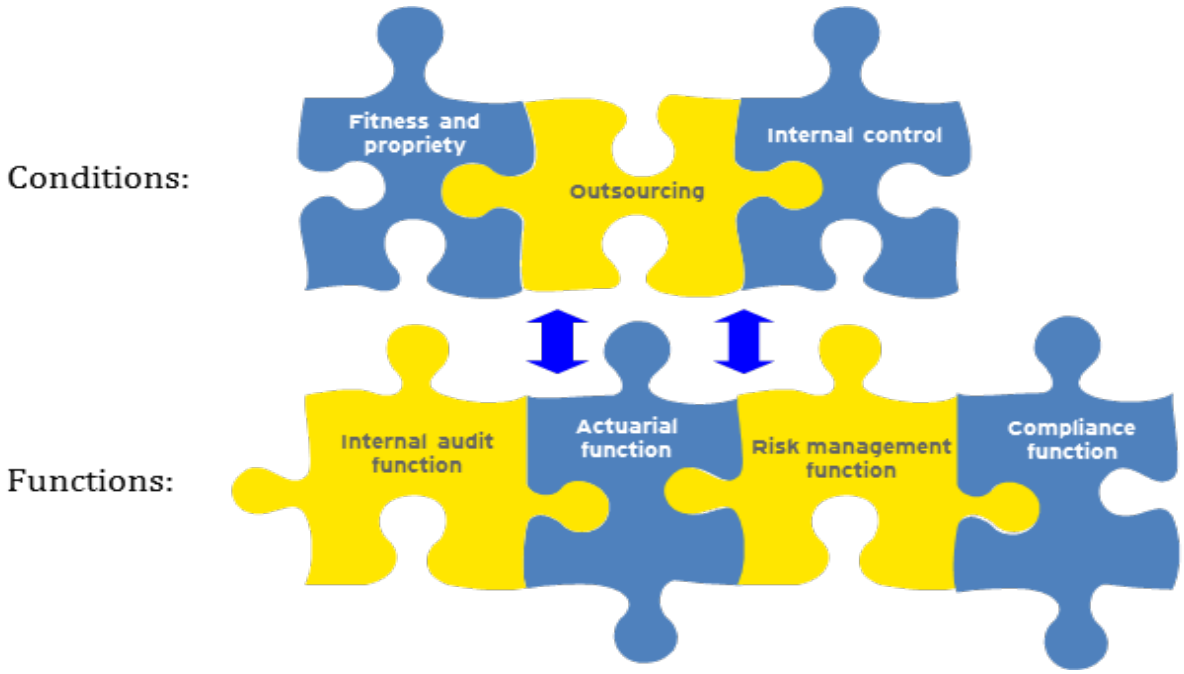
adverse development in each future annual period, yet doesn't assume you need to hold sufficient capital from inception to settlement without raising capital. Therefore, critics of Solvency II believe using one-year 99.5% VaR as the capital standard in the risk margin calculation does not provide a true fair market value.

The SCR can be calculated using the standard model, an approved internal model or a mix of both. To obtain approval for an internal model, the company has to demonstrate that the model is used in running the business, has been validated by an independent third party and is documented appropriately. The benefits of using an internal model are a model which is more appropriately tailored to the risk profile of the insurance company and the likely outcome of a lower SCR.

Any remaining amount between the assets minus the technical provisions and SCR is considered free surplus.

PILLAR II — SUPERVISORY ACTIVITIES

Pillar II provides insurance supervisors with the tools required to identify high-risk companies and the power to intervene. First, this pillar requires companies to have the governance structure in place to address the following key areas:




The functional areas, while each satisfying the conditions, should be allocated responsibility in a manner that avoids duplication. Each one is viewed as essential for an insurance business to operate effectively. Key responsibilities of each function include:

- Internal audit: Produce a report at least annually to the board of directors on any deficiencies of the internal controls and any shortcomings in compliance with internal policies and procedures. This function should have unrestricted access to information and staff.
- Actuarial: Ensure the reasonability of methods and assumptions used in calculating the technical provisions and providing a look-back analysis of best estimates against experience. Also, provide opinions on the overall underwriting policy and adequacy of reinsurance arrangements.
- Risk management: Monitoring the risk management function and maintaining an aggregated view. Ensure the integration of any internal model with the risk management function.
- Compliance: Ensure the internal control system is effective to comply with all applicable laws and regulation, promptly reporting any major compliance issues to the board of directors.

Pillar II also requires that companies complete an own risk self-assessment (ORSA). The ORSA has been defined by the European Insurance and Occupational Pensions Authority (EIOPA) as: "The entirety of the processes and procedures employed to identify, assess, monitor, manage, and report the short- and long-term risks a (re) insurance undertaking faces or may face and to determine the own funds necessary to ensure that the undertaking's overall solvency needs are met at all times."

An ORSA should contain at a minimum the following:

- The overall solvency needs, taking into account the specific risk profile, approved risk tolerance limits and the business strategy of the undertaking
- The compliance with the capital requirements and the requirements regarding technical provisions
- The extent to which the risk profile of the undertaking deviates significantly from the assumptions underlying the SCR, calculated with the standard formula or with its partial or full internal model

The ORSA results will periodically be reported to the supervisor who will use the results as input for their risk-based supervision and actions. The ORSA will also be the basis for the dialogue between the insurer and the supervisor regarding important decisions made by the insurer.

In the case of significant deviations from the risk profile, the ORSA will be the starting point of the supervisor's process that could lead to a capital add-on (i.e., an increase in the SCR).

PILLAR III — TRANSPARENCY

Pillar III represents the disclosure and reporting of information about a company's capital and regulatory position collected from Pillars I and II to the supervisors and the financial markets. Some items will be reported quarterly and others annually. The purpose of public disclosure of a company's financial and solvency position is to increase market discipline because companies are aware that their risk-based decisions will be in the public and supervisory domains.

COMPARISON TO THE U.S. SOLVENCY REGIME

Solvency II was developed as a group wide solvency regime. The U.S. regime, being state-based, is focused on the regulation of individual statutory entities with capital "walled" off from other entities in the group. However, pressure stemming from the financial crisis in 2008 combined with closer coordination between international insurance regulators led to the NAIC's Solvency Modernization Initiative ("SMI").

The SMI developed a "Windows and Walls" approach, giving windows for state insurance regulators to look into group wide operations and the effect those operations might have on a statutory entity, while maintaining the walls at the statutory legal entity level. Those windows that developed out of the SMI were:

1.Communication between regulators – enhanced communications between the state insurance regulators within the group

2. Supervisory Colleges – formally incorporate supervisory colleges of international regulators into the NAIC review procedures

3. Access to and collection of information – enhanced access to upstream entities within a group structure including regulated and non-regulated entities

4. Enforcement measures – tools to protect policyholders if violations occur

5. Group capital assessments –group supervision requires a panoramic view of capital needs of the group to be effective

6. Accreditation – state insurance regulators involved in group supervision should be accredited through the NAIC

The regulatory tool developed to implement several of these windows was the U.S. Own Risk and Solvency Assessment ("ORSA") requirement. The NAIC defines the ORSA as *"an internal assessment … conducted by [the] insurer of the material and relevant risks identified by the insurer associated with an insurer's current business plan and the sufficiency of capital resources to support those risks."*

The NAIC has stipulated two primary goals for the ORSA:

1. To foster an effective level of Enterprise Risk Management (ERM) at all insurance companies through which each insurance company identifies, assesses, monitors, prioritizes and reports on its material and relevant risks, using techniques that are appropriate to the nature, scale and complexity of the insurer's risks, in a manner that is adequate to support risk and capital decisions

2. To provide a group-level perspective on risk and capital, as a supplement to the existing legal entity view

In order to meet these goals, an insurer that is a member of an insurance holding company system (as defined by state insurance law) and meets certain benchmarks for direct written and unaffiliated

assumed premium is required to complete the ORSA process at least annually and create an ORSA Summary Report to be provided to its lead state commissioner and, upon request, to its domiciliary state commissioner. Additionally, the insurer must retain documentation and supporting risk management material to evidence the efficacy of its ORSA process, as these may be requested for review by the insurer's state commissioner(s).

The ORSA process is intended to be just one element of an insurer's overall ERM framework, in which the insurer assesses and summarizes the other elements of the framework, as well as linking these to the insurer's overall organizational structure, business strategy and capital management/planning process. Accordingly, the NAIC expects that the depth and detail of the ORSA and the ORSA Summary Report should reflect the nature of the size and complexity of insurer and its ERM framework. To assist state commissioners in gaining a high-level understanding of an insurer's ORSA, the NAIC has established three key areas that the ORSA Summary Report should cover:

Section 1: Description of the Insurer's Risk Management Framework

This section provides a summary of the insurer's ERM framework, covering how the insurer has integrated the following key principles into the organization: risk culture and governance; risk identification and prioritization process; risk appetite and tolerances/limits; risk management and controls; and risk reporting and communication. In summary, it brings together how the insurer identifies and categorizes its material risks and how it assesses, monitors and manages those risks against its established risk tolerances as it executes its business strategy.

Section 2: Insurer's Assessment of Risk Exposure

This section provides a high-level summary of the current quantitative and/or qualitative assessments of the insurer's risk exposure in both normal and stressed environments for each material risk category identified in Section 1. In addition to providing detailed descriptions and explanations of the risks identified by the insurer, the insurer describes the assessment methodology used and key assumptions made to evaluate the current risk level and how this compares to the relevant risk tolerances/limits for the risk under both normal and stressed conditions. For P&C insurers, relevant material risk categories typically include insurance risk (often divided into underwriting/premium risk, reserve risk and catastrophe risk), market risk, credit risk, liquidity risk, operational risk, and strategic risk.

Section 3: Group Assessment of Risk Capital and Prospective Solvency Assessment

This section provides a summary of the insurer's process for assessing capital adequacy in relation to its risk profile and how this process is integrated into the insurer's management and decision-making culture. For the Group Assessment of Risk Capital, the insurer describes its approach for assessing its group capital adequacy, including the basis of its definition of solvency, accounting/valuation basis, and the key methodologies, assumptions and considerations used in calculating available capital and risk capital required. For the Prospective Solvency Assessment, the

insurer projects its future financial position, including its projected economic and regulatory capital to assess its ability to meet its internally defined risk appetite and its regulatory capital requirements based on the insurer's multi-year (typically three to five years) business plan. The Prospective Solvency Assessment is also completed under both normal and stressed environments.

Further detail on the requirements for completing an ORSA process and the details that are expected to be covered within each section of an insurer's ORSA Summary Report can be found in the NAIC's *Own Risk and Solvency Assessment (ORSA) Guidance Manual*[202].

Depending on their role within an insurer, actuaries may become involved in the ORSA process in several ways.

Due to the significant role they play in establishing and executing the insurer's ERM framework and policies, identifying and monitoring its key risks, and assisting senior leadership in overall risk and capital management, an actuary that serves as the insurer's Chief Risk Officer and actuaries that are members of its ERM function typically have ownership of the overall drafting of the ORSA Summary Report, particularly where these elements are covered within Section 1. Additionally, actuaries within the ERM function are frequently involved with the estimation and monitoring of the insurer's risk exposure in relation to its risk tolerances for the material risks identified in Section 2, as well as the modelling of the group's risk capital adequacy and prospective solvency assessment detailed in Section 3.

Actuaries working within an insurer's pricing or reserving functions assist the ERM team in the risk identification and assessment/estimation process for the insurer's material insurance risks and may contribute to drafting sections of the ORSA Summary Report related to their risk area.

The models utilized by the insurer to estimate its material risk exposures, group risk capital and prospective solvency position are typically validated by another qualified actuary that was not involved in their development, which sometimes results in the involvement of a third-party party actuarial consulting firm.

Finally, actuaries assisting in the regulatory examination and financial analysis review of an insurance company may review the ORSA Summary Report to better understand the material risks the insurer is facing, its current and projected capital adequacy, and the strength of the insurer's risk management program.

[202] https://www.naic.org/documents/prod_serv_fin_recievership_ORSA-2014.pdf

## CHAPTER 26. TAXATION IN THE U.S.

Beyond the solvency and general-purpose financial reporting frameworks, taxation is another framework applicable to insurance companies. Taxation has many forms, including the direct taxation of the income of corporations. Generally, tax is imposed on net profits from business, net gains, and other income. The income subject to taxation is determined under accounting principles that are modified or replaced by tax law principles where a different basis is determined as necessary by the relevant taxing authorities. In the U.S., an insurance company is taxed based on its statutory income, but with adjustments provided by the Internal Revenue Code ("IRC") that will be described herein.

Understanding the impact of federal taxation is important for insurance contract pricing, insurance company valuation, capital models construction, and tax returns preparation. Additionally, when there are changes to the tax law, it is important to understand the changes that occurred and the potential impact. In 2017, the Tax Cuts and Jobs Act of 2017 ("TCJA"), which became effective beginning tax year 2018, changed key federal tax rules. The changes most significant to property/casualty insurance carriers were related to the corporate tax rate, the discounting rules, and the international tax system.

In this chapter, we will present a summary of how taxable income is derived for property/casualty insurance companies from their statutory accounts, including a review of the adjustment of loss reserves for discounting. We will also review the process for determining taxable income attributable to statutory underwriting income and to investment income. Statutory underwriting income consists of premium revenue (i.e., earned premiums) minus losses and expenses incurred.

TAX BASIS EARNED PREMIUMS

On a tax basis, earned premiums are adjusted for "revenue offset". The need for the revenue offset stems from a lack of a deferred acquisition cost asset under statutory accounting. Assume that today a company wrote a policy effective January 1 of the following year for $100 but incurred $20 in acquisition costs. Under statutory accounting, the company would incur a $20 loss from establishing an unearned premium reserve of $100 and payment of $20 in acquisition costs. Rather than allowing property/casualty insurance companies to claim a tax credit on that "loss" under statutory accounting, the IRC has established a revenue offset convention, often referred to as the "20% haircut" The revenue offset convention assumes that acquisition costs are 20% of net written premiums for all lines of property/casualty business and all types of insurers and requires that 20% of unearned premiums be currently included in earned premiums. In our example, the unearned premium reserve would be reduced by $20, resulting in the income effect from writing this contract as $0.

Statutory earned premium is calculated as net written premium minus the change in the unearned premium reserve. Under the revenue offset convention, tax basis earned premiums are net written premium minus 80% of the change in unearned premium reserves.

Tax Basis Earned Premium
= Net Written Premium – (0.8 x (Change in Unearned Premium Reserve))

This formula can be rearranged to provide:

Tax Basis Earned Premium
= Statutory Earned Premium
+ (0.2 x (Change in Unearned Premium Reserve)).

Where the change in Unearned Premium Reserve
= Unearned Premium Reserve at end of period – Unearned Premium Reserve at beginning of period.

TAX BASIS INCURRED LOSSES AND LOSS ADJUSTMENT EXPENSES

Statutory calendar-year incurred losses are paid losses plus the change in full value loss reserves:

Incurred losses = Paid losses + Change in full value loss reserves
= Paid losses + (Full value loss reserves at end of period – Full value loss reserves at beginning of period).

For long-tailed lines of business, without the time value of money considerations that are considered in the pricing of policies, the result may be an underwriting loss under this statutory definition of incurred losses. As we previously discussed, the IRC does not provide an insurance company with a tax credit for what appears to be a temporary loss when investment income can be made on the reserves held before the claims are paid. To avoid this, tax basis accounting is more aligned with economic reality by requiring the discounting of loss reserves, albeit with defined rules and the lack of a risk margin/adjustment.

Our next section will discuss the process of discounting for taxes in more detail. For now, it is sufficient to understand that:

Tax Basis Incurred Losses = Paid Losses + Change in Discounted Reserves
= Statutory Incurred Losses – Change in Reserve Discount.

Loss adjustment expenses are treated in the IRC in the same manner as losses (i.e., estimated loss adjustment expense is subject to discounting). Other kinds of expense liabilities are addressed in a different paragraph in the IRC and may be subject to a different timing requirement.

INVESTMENT INCOME

Taxable investment income consists of income from bonds, mortgages, real estate and venture capital holdings, and realized capital gains. In addition, there are two key adjustments: proration of tax-exempt municipal bond interest and proration of dividends received deduction for stockholder dividends.

Tax-exempt municipal bonds produce tax-free income for most taxpayers. Similarly, the dividends received deduction (DRD) allows most corporate taxpayers to reduce taxable income by a portion of dividends received from other corporate taxpayers. Generally, earnings credited to the cash values of life insurance policies owned by corporate taxpayers are not recognized as current income. Insurance companies, however, are required under the IRC to include a portion of such tax-favored income and earnings in taxable income under a rule known as "proration". For a property/casualty insurer, proration increases taxable income by reducing the deduction for losses incurred by a percentage of such tax favored income.

Previously, the proration rules required a property/casualty insurance company to reduce its losses incurred deduction by an amount equal to 15% of the sum of its tax-exempt income, DRD and any earnings credited to life insurance products owned.

The TCJA amended the proration rules in a manner that retains the prior law's financial effect (i.e., a 15% reduction in the deduction from income taxed at a top marginal rate of 35%) while reflecting the reduction of the top corporate marginal rate from 35% to 21%. It does so by replacing the reduction percentage of 15% under previous law with a reduction percentage computed by dividing 5.25% (the "applicable percentage" referred to in the statute) by the top corporate tax rate of 21%, which results in a reduction percentage of 25%. Should the top corporate tax rate change in future years, the proration rate will also change.

BASE EROSION AND ANTI-ABUSE TAX (BEAT)

Now that we have determined taxable income, we can establish the regular tax liability, which is 21% of taxable income, a decrease from 35% under the previous tax law. Yet that is not necessarily the end of the calculations; if a U.S. insurance company makes a payment to a related foreign company, it might be subject to the BEAT.

In general, the BEAT calculations may apply when a domestic taxpayer, such as an insurance company that is domiciled in the U.S., obtains a "base erosion tax benefit" as a result of making a "base erosion payment" to a related foreign party. BEAT applies when the insurance company is part of a U.S. group of companies that has average gross receipts in the past three years equal to or in excess of $500M and if base erosion payments constitute 3% or more of the total deductions taken by the U.S. group on its current tax return.

The BEAT operates as a type of "minimum tax" that is added to the regular tax liability. It operates by ascertaining the "modified taxable income" of a U.S. taxpayer that has paid or incurred amounts to a foreign related party that provide deductions from regular taxable income or, in the case of reinsurance premiums to a foreign reinsurer, reduce gross income included in regular taxable income. Generally, modified taxable income is determined by adding back to regular taxable income the base erosion tax benefit caused by a base erosion payment. This minimum tax is equal to the excess of:

i. BEAT rate x modified taxable income over
ii. Regular tax liability

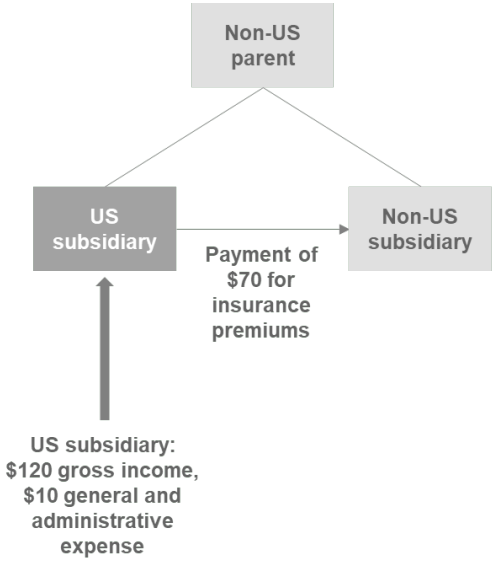
The BEAT rate in the 2018 tax year was 5%, moving to 10% in tax years 2019 through 2025, and then subsequently to 12.5%. The modified taxable income includes the income subject to the regular tax rate plus all deductible or excludible payments made to a foreign affiliate (base erosion payments) for the year.

Accordingly, to determine the BEAT charge a corporation should perform the following steps:

1. Determine if subject to the BEAT
2. Determine taxable income and compute regular tax of its U.S. companies
3. Compute modified taxable income
4. Apply the BEAT tax rate to modified taxable income
5. Compare regular tax liability with the BEAT

As an example, assume there is a domestic insurance company that is part of a U.S. group that meets the minimum requirements for being subject to the BEAT. In the 2019 tax year, this U.S. subsidiary has $120 of gross written premium for coverage effective January 1 (and so no unearned premiums), $0 investment income, $0 losses incurred and $10 of general and administrative expenses. Additionally, the U.S. subsidiary paid reinsurance premiums of $70 to a related foreign insurance company.

TABLE 109




| | Ordinary | BEAT |
|---|---|---|
| US subsidiary taxable income | $40 | $40 |
| Add back base erosion payments, deductible payments made to foreign affiliates | | $70 |
| Modified taxable income | | $110 |
| **Ordinary US tax at 21%** | **$8.40** | |
| **BEAT at 10%** | | **$11.00** |
| **Additional tax due for BEAT** | **$2.60** | |

Note: The 10% BEAT rate is for illustrative purposes and will vary depending on tax year.

The U.S. subsidiary regular tax must first be determined:

- Taxable income = $120 gross written premium reduced by $70 of reinsurance premiums reduced by expenses of $10 = $40
- Regular tax = $40 * 21% = $8.40

Then the BEAT tax must be determined:

- Modified taxable income = $40 + $70 = $110
- BEAT tax = $110 * 10% = $11

As such, the additional tax due under the BEAT is $2.60 ($11 - $8.40).

It is noted, however, that payments to a foreign company that has elected to be taxed as a U.S. taxpayer under Section 953(d) are not subject to the BEAT.

DISCOUNTING LOSS RESERVES FOR TAXES

In the section within Chapter 22 titled “Deferred Tax Assets”, we discussed the reasons why statutory loss reserves are discounted in calculating taxable income. We shall now look in more detail at the method prescribed under the IRC for determining the discount required. The discounted loss reserves are calculated using three components:

1. The undiscounted loss reserves
2. The discount rate promulgated by the U.S. Treasury for that accident year
3. The payment pattern

The first component is obtained from Schedule P, Part 1. Reserves in Schedule P, Part 1 are net of tabular discount but gross of non-tabular discount. Therefore, any tabular discount will need to be eliminated to gross-up the loss reserves from Schedule P, Part 1 to an undiscounted basis.

The discount rate will be determined by the U.S. Treasury for each accident year and is to be based on the corporate bond yield curve., effective for taxable years beginning after December 31, 2017. This, this is a change from the previous tax law, where the discount rate was determined for each accident year based on the 60-month average of the Federal midterm rates.

The payment pattern for each line of business is determined every five years by the IRS based on the paid loss development from industry aggregate Schedule P, Part 1 data. Under the TCJA, insurance companies can no longer elect to use their own payment patterns.

Additionally, during the transition from the previous tax law to the TCJA in tax year 2018, unpaid losses and loss adjustment expenses for all accident years were discounted using the interest rate and loss payment patterns applicable to accident year 2018. The recognition of the adjustment (differences in taxable reserve estimates between the prior methodology and the new methodology at the same point in time) from the interest rate and payment pattern changes are evenly spread across eight tax years so that Companies are not burdened with the full change in the first year in taxable income from a change in the tax reserve. Below is an example of an implied eight year spread:

TABLE 110

| Tax Year | Statutory Reserve | Tax Discount Factor* | Beginning of Year 2018 Net Change in Taxable Reserve** | 8 Year Spread of Net Change*** |
|---|---|---|---|---|
| 2017 | 51,557 | 0.9 | | |
| 2018 | | 0.8 | (5,156) | (644) |
| 2019 | | | | (644) |
| 2020 | | | | (644) |
| 2021 | | | | (644) |
| 2022 | | | | (644) |
| 2023 | | | | (644) |
| 2024 | | | | (644) |
| 2025 | | | | (644) |

* For example purposes, assume that 0.9 is the company implied tax discount factor under the prior law and 0.8 is the implied company tax discount factor under the current law
** -$5,156 = $51,557 * (0.8 - 0.9)
*** -$644 = -$5,156/8

TCJA IMPACT

As discussed above, the TCJA had the following key changes affecting insurance companies:

- Decrease in the corporate tax rate
- Repeal in the election for use of company-specific payment patterns
- Change in the determination of the interest rate
- Addition of the Base Erosion and Anti-Abuse Tax (BEAT)

These changes will have varying impacts, with the biggest drivers being the primary exposures that are written, what payment patterns were used in the past, and whether or not the company utilizes an affiliated foreign entity for certain transactions (e.g., reinsurance).

# PART VII. CANADIAN-SPECIFIC REPORTING

## INTRODUCTION TO PART VII

This part provides an overview of insurance financial reporting in Canada and a description of the main participants who influence the reporting framework in Canada. The Canadian regulatory Annual Statement and certain key elements of particular importance to Canadian actuaries are discussed.

## CHAPTER 27. OVERVIEW OF FINANCIAL REPORTING IN CANADA

### OVERVIEW

Insurance regulators, the accounting profession, and the actuarial profession play a role in setting the framework for insurance financial reporting in Canada.

Insurance is regulated in Canada at the federal and provincial levels. As a result, insurance companies can choose to be registered federally (across Canada) or separately in each province where they conduct business. The majority of insurers are regulated federally under the jurisdiction of the Office of the Superintendent of Financial Institutions (OSFI).[203] Registered[204] insurers are required annually to file detailed financial statements with supporting exhibits and quarterly updates. In addition, since 1992 registered insurers have been required to appoint an actuary ("Appointed Actuary") to value their policyholders' liabilities and to report at least annually on the current and future financial condition of the insurer. Each province regulates its own policy forms and monitors market conduct; hence, an insurer must also be licensed by each province in which it writes business regardless of where it is registered.

### OFFICE OF THE SUPERINTENDENT OF FINANCIAL INSTITUTIONS

OSFI is a federal agency established in 1987 under the Office of the Superintendent of Financial Institutions Act. OSFI's mandate is to supervise all federally regulated financial institutions, monitor federally regulated pension plans and provide actuarial advice to the Government of Canada.

OSFI's activities are structured to protect the rights and interests of depositors, policyholders, pension plan members, and creditors of financial institutions and in so doing to contribute to the public confidence in a safe and sound financial system. This is accomplished through supervision under a principles-based regulatory framework which is designed[205] to identify key risks in certain institutions and intervene as appropriate and through regulation to enhance the financial system's safety and soundness.

OSFI differs from the National Association of Insurance Commissioners (NAIC) in that OSFI covers all federally regulated financial institutions and not just insurance companies. OSFI has authority over the entities it regulates, whereas the NAIC is a coordinating body that works with state insurance regulators to provide support and coordination to the regulation of multistate insurers across the various states.

### INTERNATIONAL FINANCIAL REPORTING STANDARDS (IFRS)

[203] Office of the Superintendent of Financial Institutions Canada, http://www.osfi-bsif.gc.ca/, May 20, 2017.

[204] A registered insurer in Canada is an insurer that is licensed to distribute insurance policies by either the federal regulator or a provincial regulator in Canada.

[205] OSFI's web site provides a table of guidelines such as the Minimum Capital Test which comprise the principles-based regulatory framework by which OSFI regulates insurers in Canada.

On January 1, 2013, the Chartered Professional Accountants of Canada (CPA Canada) was established by both the Canadian Institute of Chartered Accountants (CICA) and the Society of Management Accountants of Canada (CMA Canada) to support the Canadian provincial accounting bodies unifying under the CPA banner. Certified General Accountant (CGA-Canada) integrated with CPA Canada on October 1, 2014, completing the unification of Canada's accounting profession at the national level.

In 2011, the Canadian Institute of Chartered Accountants (CICA) adopted all changes to IFRS standards issued by the International Accounting Standards Board (IASB) as part of the reporting framework for publicly accountable entities (PAE).[206] Regulated insurance companies meet the definition of PAEs and therefore were required to adopt IFRS as of January 1, 2011 (with comparative information for 2010). Today, this still holds with the merge to CPA Canada.

IFRS 4 is the current standard that deals with accounting for insurance contracts. It allows for the continuation of valuation practices in existence at the adoption of IFRS that Canadian Generally Accepted Accounting Principles (CGAAP) provided for insurance contracts. Under CGAAP the policy liabilities can be recorded in accordance with accepted actuarial practice (AAP) in Canada, which means the recorded liabilities are discounted to reflect the time value of money and include a provision for adverse deviation. The accounting for foreign branches and domestic insurers is substantially the same, and their financial statements are prepared in accordance with IFRS. However, there are two key differences for foreign branches:

1. The assets of foreign branches are required to be under the control of either the Minister of Finance of Canada or the branches' Chief Agent in Canada. The amount of assets under the control of the Minister of Finance is determined by risk based minimum capital requirements, further described in Chapter 29. Assets that are under the control of the Minister of Finance are to be placed in a trust.

2. There is no share capital account, as the entity is operating as a branch of its parent; therefore, there is a head office account instead.

[206] Publicly accountable enterprises, https://www.canada.ca/en/revenue-agency/services/tax/businesses/topics/international-financial-reporting-standards-ifrs/publicly-accountable-enterprises-paes.html, 2019

[5] Chartered Professional Accountants of Canada, https://www.cpacanada.ca , 2018.

## CANADIAN INSTITUTE OF ACTUARIES

The Canadian Institute of Actuaries (CIA) is the national organization of the Canadian actuarial profession.[207] The CIA serves the public through the provision, by the profession, of actuarial services and advice of the highest quality.

AAP is the manner of performing work in Canada in accordance with the rules and the Standards of Practice (SOP) of the CIA. SOP is the responsibility of the Canadian Actuarial Standards Board,[208] and approval of standards and changes to standards are made through a process that involves consultation with the actuarial profession and other interested parties. If AAP conflicts with the law, an actuary should comply with the law but report the conflict and, if practical, useful and appropriate under the terms of the engagement, report the result of applying AAP.

The SOP published by the CIA are binding on fellows, associates, and affiliates of the CIA for work in Canada and for members of bilateral organizations, as defined in the bylaws, when those members are practicing in Canada. The standards consist of recommendations and explanatory text. A recommendation is the highest order of guidance in the SOP. Unless there is evidence to the contrary, there is a presumption that a deviation from a recommendation is a deviation from AAP. Explanatory text, which consists of definitions, explanations, examples, and useful practices, support and expand upon the recommendations.

The SOP consist of general standards and practice-specific standards. The general standards apply to all areas of actuarial practice. Usually, the intent of the practice-specific standards is to narrow the range of practice considered acceptable under the general standards.

Actuaries practicing in Canada should be familiar with relevant educational notes and other designated educational material affecting their practice. Educational notes are not binding on an actuary; however, educational notes and other designated educational material describe but do not recommend practice in illustrative situations. A practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily AAP for a different situation.

## DIFFERENCES BETWEEN STATUTORY AND OTHER FINANCIAL/REGULATORY REPORTING FRAMEWORKS IN CANADA

Canadian insurers are required to prepare their financial statements in accordance with IFRS, as issued by the IASB, since 2011. The Canadian Annual Returns were also modified to include the impacts of changes to IFRS. Upon the introduction of IFRS, the insurance contracts standard (IFRS 4) permitted insurers to apply CGAAP for their insurance contracts. With IFRS 4, there was little impact on the

[6] Canadian Institute of Actuaries, http://www.cia-ica.ca/, 2018.

[7] Actuarial Standards Board, "*About the ASB – Terms of Reference,*" http://www.asb-cna.ca/, September 27, 2017.

financial statements of Canadian property/casualty insurers, and as in the past, the statutory Annual Return was prepared on the same basis as the company's financial statements.

In May 2017, the IASB issued a new insurance contracts standard, IFRS 17, which is effective for annual accounting periods beginning on 1 January 2023. As companies were allowed to use a wide variety of accounting practices for insurance contracts under IFRS 4, it was difficult for investors and analysts to understand and compare results of insurers, especially from an international perspective. IFRS 17 is expected to improve the comparability of financial performance of insurance contracts between different entities. The standard applies to both life and property and casualty insurers and it requires insurers to divide insurance contracts into groups, and recognize groups of contracts as risk-adjusted present value of future cash flows, plus an amount representing the unearned profit in the group of contracts (named contractual service margin under IFRS 17). There is a simplified approach (premium allocation approach) that will apply to certain types of contracts, which is somewhat consistent with current Canadian practice, and it is expected that this simplified approach will be widely adopted by property and casualty insurers in Canada. The standard may have a significant effect on many insurers as their existing accounting policies are likely to differ from those required by the IFRS 17. Therefore, the costs involved in implementing IFRS 17 are expected to be substantial because of the need for significant systems development in order to capture the required information.

Statutory Accounting Principles (SAP) is the accounting framework under which all U.S. insurance companies are required to report for state regulatory purposes. There are many differences between SAP and IFRS, including the valuation of invested assets and the valuation of policy liabilities. These differences arise because in Canada there is a desire to achieve consistency with published financial statements and in the U.S. there is a focus on insurer solvency.

## CHAPTER 28. CANADIAN ANNUAL RETURN

OVERVIEW

All insurers are required to file an Annual Return (or Canadian Annual Statement) based on International Financial Reporting Standards (IFRS) in each province where they are licensed and with the Office of the Superintendent of Financial Institutions (OSFI) if they are federally regulated. The Annual Returns are prescribed forms that are annually reviewed by the Canadian Council of Insurance Regulators. The full Annual Return is to be completed and filed annually within 60 days of year-end. In addition, there is a requirement to file interim returns on a quarterly basis within 45 days of the end of each quarter.

PREPARATION OF KEY SCHEDULES

The Canadian Annual Return is logically divided into a number of sections as follows:

- General information: This section contains information about the company, its officers, and directors and a summary of selected financial data for five years.
- Consolidated financial statements: This section shows the company's balance sheet (assets, liabilities, and equity), statement of income; statement of retained earnings and reserves; statement of comprehensive income and accumulated comprehensive income; statement of cash flows; statement of changes in equity; and notes.
- Statutory compliance: This is the Minimum Capital Test (MCT) for domestic insurers or the Branch Adequacy of Assets Test (BAAT) for foreign insurers, including supporting exhibits, related to capital adequacy.
- Investments: This includes detailed information relating to the company's invested assets.
- Miscellaneous assets and liabilities: This includes items such as other receivables and interests in joint ventures.
- Premiums, claims, and adjustment expenses: This section contains detailed information relating to unearned premiums, incurred losses, claims liabilities, and runoff of claims and adjustment expenses.
- Provincial and territorial summaries: This provides geographical premium and claims information.
- Reinsurance ceded: This includes information related to premiums and claims ceded.
- Commissions and expenses: This includes details relating to commissions and operating expenses.
- Out of Canada exhibits: This section provides detail relating to operations outside of Canada.
- Non-consolidated financial statements and exhibits: Financial statements and many of the exhibits are also provided on a non-consolidated basis.

The report of the appointed actuary must be submitted with the Annual Return. It is expected that the values reported in the financial statements for the items included in the opinion of the appointed actuary not differ materially from the values opined on by the appointed actuary.

BALANCE SHEET

Appendix II of this publication shows separately the assets and liabilities and equity elements of the balance sheet for the total of all Canadian property/casualty insurance companies as reported by the OSFI as at December 31, 2017. The Appointed Actuary should be familiar with all aspects of the Annual Return; however, the Appointed Actuary is opining on the policy liabilities and is thus expected to demonstrate a significant understanding of all elements of the policy liabilities (claims and policy liabilities in connection with unearned premiums ).

The claims and premium liabilities are typically the largest liabilities on the balance sheet of an insurer and are reported through the following:

1. Claims liabilities:
    a. Direct unpaid claims and adjustment expenses
    b. Assumed unpaid claims and adjustment expenses
    c. Ceded unpaid claims and adjustment expenses
    d. Other amounts to recover
2. Premium liabilities:
    a. Gross unearned premiums
    b. Net unearned premiums
    c. Premium deficiency reserves
    d. Other net liabilities
    e. Deferred policy acquisition expenses
    f. Unearned commissions

Table 111 summarizes the balance sheet provided in Appendix II of this publication into key items from the perspective of the Appointed Actuary.

TABLE 111

| Balance sheet summary — Canadian property/casualty companies at December 2018 | | | |
|---|---|---|---|
| **Assets** | | **Liabilities and Equity** | |
| Total Investments | 69,100,568 | Unpaid Claims and Adjustment Expenses | 58,646,287 |
| Unpaid Claims Recoverable from Reinsurers | 17,103,237 | Unearned Premiums | 25,688,427 |
| Unearned Premium Recoverable from Reinsurers | 4,101,116 | Unearned Commission | 787,090 |
| Deferred Policy Acquisition Expenses | 4,509,415 | Other Liabilities | 8,782,174 |
| Other Assets | 30,208,179 | Equity | 31,118,537 |

As illustrated, the unpaid claims and loss adjustment expense (LAE) and unearned premium liabilities are the most significant liabilities on the balance sheet. In Canada, the claims and premium liabilities are reported on the balance sheet on a gross basis. That is, the liabilities are reported gross of reinsurance, and an asset is recorded to reflect the amount of the liabilities expected to be recoverable from reinsurers, which, as illustrated above, is a significant asset on the balance sheet.

The liabilities in Canada are recorded in accordance with AAP, which requires that the liabilities be equal to the value discounted to reflect the time value of money plus a provision for adverse deviation (PfAD). A discount rate has to be selected to determine the present value of the liabilities. This discount rate is defined by the Canadian Institute of Actuaries as follows:

> "The expected investment return rate for calculation of the present value of cash flow is that to be earned on the assets, taking into account reinsurance recoverables, that support the insurance contract liabilities. It depends on
>
> > the assets owned at the calculation date,
> > the allocation of those assets and related investment income among lines of business,
> > the method of valuing assets and reporting investment income,
> > the yield on assets acquired after the calculation date,
> > the capital gains and losses on assets sold after the calculation date
> > investment expenses, and
> > losses from asset depreciation.
>
> The actuary need not verify the existence and ownership of the assets at the calculation date, but would consider their quality." [209]

[209]CIA ASB, Actuarial Standards of Practice – Practice-Specific Standards for Insurance (2000), *Present Values*, page 2022. http://www.cia-ica.ca. *(Effective April 15, 2017; Revised February 1, 2018.)*

This definition requires the Appointed Actuary to also understand the assets on the balance sheet, how they are valued and the insurer's investment policy. Typically, a large proportion of invested assets are used to support insurance contract liabilities. Therefore, the Appointed Actuary should be able to estimate the expected investment return on those assets. The following chart, Table 112, illustrates a simple calculation of the market yield of a bond portfolio. The market yield and modified duration are calculated using readily available spreadsheet functions and the overall yield is calculated using the product of modified duration and market value as weights.

TABLE 112

**XYZ Insurance Company**
**CDN$**
**Evaluation Date: December 31, 2018**

| Description | Interest Rate | Maturity Date | Par Value | Market Value | Market Yield | Effective Market Yield | Modified Duration |
|---|---|---|---|---|---|---|---|
| BOND A | 5.38% | 18-11-50 | 320,000.00 | 371,314.76 | 4.45% | 4.50% | 16.47 |
| BOND B | 4.87% | 18-06-42 | 8,844,000.00 | 10,420,050.06 | 3.75% | 3.79% | 15.07 |
| BOND C | 4.46% | 08-11-41 | 235,000.00 | 252,477.15 | 3.98% | 4.02% | 14.87 |
| BOND D | 6.95% | 24-10-41 | 805,000.00 | 874,269.61 | 6.25% | 6.35% | 11.91 |
| BOND E | 5.15% | 15-11-40 | 75,000.00 | 85,366.32 | 4.20% | 4.25% | 13.93 |
| BOND F | 3.10% | 18-06-40 | 2,055,000.00 | 2,638,690.57 | 1.59% | 1.60% | 17.02 |
| BOND G | 4.56% | 26-03-40 | 1,080,000.00 | 1,321,528.41 | 3.15% | 3.18% | 14.67 |
| BOND H | 4.99% | 30-10-37 | 200,000.00 | 247,497.12 | 3.34% | 3.37% | 13.28 |
| BOND I | 5.04% | 21-09-29 | 200,000.00 | 275,976.38 | 1.50% | 1.50% | 9.30 |
| BOND J | 4.30% | 08-09-29 | 355,000.00 | 531,274.16 | 0.04% | 0.04% | 9.73 |
| BOND K | 3.25% | 18-12-23 | 25,000.00 | 25,948.14 | 2.56% | 2.58% | 5.41 |
| BOND L | 8.50% | 22-11-23 | 200,000.00 | 224,468.00 | 6.00% | 6.09% | 4.65 |
| BOND M | 8.00% | 27-03-22 | 6,134,000.00 | 6,360,609.90 | 6.97% | 7.10% | 3.50 |
| BOND N | 4.25% | 30-05-21 | 3,270,000.00 | 2,893,628.26 | 8.18% | 8.34% | 3.06 |
| BOND O | 4.95% | 10-03-20 | 4,800,000.00 | 4,947,188.78 | 3.48% | 3.51% | 2.04 |
| BOND P | 4.80% | 18-06-20 | 378,000.00 | 405,969.44 | 1.72% | 1.73% | 2.34 |
| BOND Q | 5.56% | 30-10-19 | 1,375,000.00 | 1,449,829.32 | 2.50% | 2.51% | 1.73 |
| BOND R | 4.95% | 23-08-19 | 2,600,000.00 | 2,712,868.67 | 2.25% | 2.26% | 1.56 |
| BOND S | 4.54% | 08-04-19 | 5,000,000.00 | 5,225,046.55 | 0.97% | 0.98% | 1.23 |
| **Total** | | | **37,951,000.00** | **41,264,001.60** | | | |
| | | | Market value duration weighted average yield | | | 3.72% | |
| | | | Estimated investment expense ratio | | | 0.25% | |
| | | | Indicated discount rate net of expenses | | | 3.47% | |

There are also other more complex methods employed for estimating the investment yield, such as using a discounted cash flow model where the discount rate is the rate at which the present value of claims cash flows equals the market value of the assets or where the discount rate is the internal rate of return for a group of assets whose cash flow matches claims payout.

INCOME STATEMENT

Appendix II of this publication shows the income statement for the total of all Canadian property/casualty insurance companies as reported by OSFI as at December 31,2018. The income statement measures the financial performance of the insurer over the accounting period. The net income for the period is equal to revenues less expenses and income taxes. For an insurance company, revenues and expenses are separately identified for insurance underwriting operations, investment operations, and other operations (mainly from subsidiaries, or affiliated or ancillary operations).

In the Canadian Annual Return, insurance revenue consists of net premiums written, which is equal to direct written premiums plus assumed written premiums, less written premiums ceded to reinsurers.

The change (opening unearned premiums less ending unearned premiums) in net unearned premiums is added to net written premiums resulting in net premiums earned. The net premiums earned item is the net underwriting revenue that is attributable to the accounting period under consideration. Other underwriting-related revenues are added, such as service charges, to generate total underwriting revenue.

Premium deficiency adjustments are required if the Appointed Actuary determines that the net policy liabilities in connection with the net unearned premium are larger than the total of the net unearned premium plus unearned commission liabilities less the deferred policy acquisition expense asset as recorded by the company. Incurred claims, claims adjustment expenses, acquisition expenses, general expenses, and any premium deficiency adjustments must be deducted from total underwriting revenue to derive the underwriting income or loss for the period under consideration.

Gross incurred claims and adjustment expenses are equal to gross claims and adjustment expenses paid during the period plus the change in gross unpaid claims (ending unpaid claims minus opening unpaid claims) and adjustment expenses calculated in accordance with AAP over the period. The reinsurers' share of claims and adjustment expenses is deducted from gross incurred claims and adjustment expenses to derive net claims and adjustment expenses. This calculation of net incurred claims and adjustment expenses is consistent with the same exposure period(s) as revenue, as defined above.

The categories of acquisition expenses shown in the income statement in the Canadian Annual Return are gross commissions, ceded commissions, taxes, and other acquisition expenses. For an insurer that distributes its products through the independent broker network, commissions are typically the largest cost of acquiring the business. For those companies that have captive agents or that distribute their products directly to the consumer, the other acquisition expenses will be larger. The net commission expense is the gross (direct plus assumed) commission expense less any commission income received from ceding reinsurance — typically ceding commissions received on proportional reinsurance. The tax expense item is for taxes, other than income taxes, such as premium taxes, associated with writing insurance in Canada.

General expenses are items that do not relate directly to the acquisition of the business. This includes salaries, management fees, professional fees, occupancy costs, and information technology costs, among other items not directly related to the acquisition of the business.

Net investment income consists of investment income earned plus realized gains (losses), less investment expenses.

Underwriting income, net investment income, and other revenues and expenses are added to derive net income before income taxes and extraordinary items. Income taxes are separated into current income taxes and deferred income taxes.

Extraordinary items, net of income tax, are added to arrive at the net income or loss for the accounting period under consideration.

STATEMENT OF RETAINED EARNINGS

The statement of retained earnings illustrates the calculation of the retained earnings for the insurance company at the end of the reporting period. The retained earnings at the end of the reporting period are equal to the retained earnings at the beginning of the period plus the net income earned during the period less dividends and changes in reserves required plus any prior period adjustments.

RESERVES

This statement provides detail as to the reserves shown under the Equity section of the balance sheet. These reserves are appropriations of surplus for items such as earthquakes or nuclear events. These reserves have specific purposes and are required by OSFI in Canada.

STATEMENT OF COMPREHENSIVE INCOME AND ACCUMULATED COMPREHENSIVE INCOME

Total comprehensive income for the reporting period is equal to net income as reported on the statement of income (above) plus other comprehensive income (OCI). OCI comes from changes in unrealized gains (losses) on available-for-sale assets such as loans, bonds, and debentures and equities; derivatives designated as cash flow hedges; foreign currency translation; and share of OCI of subsidiaries, associates, and joint ventures. Items that are reclassified to earnings of gains (losses) are also included in OCI.

Accumulated other comprehensive income (AOCI) is the cumulative value of OCI or the total of unrealized gains on the above noted items that is included in the equity on the balance sheet.

STATEMENT OF CASH FLOWS

The statement of cash flows derives the value of cash and cash equivalents that are included as the cash item on the balance sheet at the end of the reporting period. Cash flow is derived from or used in operating activities, investing activities and financing activities. The cash flow during the year from these activities is added to the opening cash to derive the cash balance at the end of the year.

Operating activities relate to the operation of the business and include such items as:

- The net income generated during the year
- Changes in receivables
- Changes in unearned premiums and unpaid claims liabilities
- Recognized gains/losses in investments

The cash flow from investing activities is basically the net cash flow from the purchase of new investments and the proceeds from the sale of investments plus the amortization of premiums on investments.

The cash flow from financing activities is the net cash flow from increasing/repayment of borrowing plus the increase/redemption of shares less dividends to shareholders.

STATEMENT OF CHANGES IN EQUITY

This exhibit illustrates the change in equity across various classes of equity (e.g., share capital, retained earnings, accumulated other comprehensive income ("AOCI") ) resulting from various transactions or events such as issue of share capital, total comprehensive income for the year, and dividends.

NOTES TO FINANCIAL STATEMENTS

The notes to financial statements are an integral part of the financial statements. The notes provide significant detail on such important items as the basis of presentation, the basis of measurement, significant accounting policies and detailed explanations relating to some of the key financial statement items.

IMPACT OF REINSURANCE, INCLUDING COMMUTATIONS

Insurance companies may purchase reinsurance to limit their risk to loss from certain events. There are many different forms of reinsurance contracts that insurers can enter into, allowing each insurer to manage risk and capital in accordance with its own objectives. These reinsurance contracts can be used to protect against multi-claim, catastrophic events, individual large losses, and poor experience across a line of business, among other uses, and thereby act to reduce volatility in insurance results.

In the event that a registered insurer cedes business to a non-registered insurer, the registered insurer is required to secure adequate collateral from the non-registered insurer to receive full capital credit for the cession of this business. The collateral must be secured through a Reinsurance Security Agreement providing the adequate level of creditor protection to the ceding insurer. This aspect is further discussed in Chapter 29.

Treaty reinsurance is a contract that applies to all or a portion of an insurance company's contracts covered under the term of the agreement, typically for a calendar year. These contracts generally are placed on an excess basis or on a proportional (quota-share) basis. In an excess treaty, the reinsurer

responds to all claims during the treaty period excess of a specified threshold to a specified limit, e.g., automobile claims for $5 million excess of $5 million. In a proportional treaty, the reinsurer receives a set proportion of all premiums subject to the treaty, net of ceding commission, and in return pays the same proportion of all claims subject to the treaty. The ceding commission is paid by the reinsurer to the insurer in a proportional treaty to reimburse the insurer for policy acquisition expenses.

Facultative reinsurance differs from treaty reinsurance in that it relates to reinsurance against risks from certain policies written by an insurer. For example, an insurance company writes a very large commercial property exposure and wishes to limit its losses from this specific policy and hence purchases facultative reinsurance excess of its retained risk.

Reinsurance contracts impact the income statement and balance sheet of an insurance company. When an insurer purchases reinsurance, it pays a ceding premium, which reduces its earned premiums during the financial reporting period. It will also reduce its gross claims and adjustment expenses incurred by the reinsurer's share of claims and adjusting expenses and reduce its commission expense for any ceding commissions received. All of these items are reflected on the income statement.

Similarly, on the balance sheet of the Canadian Annual Return, there are two main reinsurance assets: unpaid claims and adjustment expenses recoverable from reinsurers, and unearned premiums recoverable from reinsurers. These assets reflect the share of the corresponding liabilities recorded by the insurer, which are recoverable from reinsurers.[210]

Table 113 charts a sample income statement and balance sheet for an insurance company prior to the application of reinsurance.

[210] This differs from the U.S. Annual Statement, where liabilities are shown net of reinsurance.

TABLE 113

**No Reinsurance**

| **Statement of Income** | | | **Balance Sheet** | | |
|---|---|---|---|---|---|
| | | | **ASSETs** | | |
| **Premium Written** | | | **Cash** | $ | 18,000 |
| Direct | $ | 340,000 | **Investments** | | |
| Assumed | $ | — | Bonds and Debentures | $ | 650,000 |
| Ceded | $ | — | Common Shares | $ | 120,000 |
| **Net Premiums Written** | $ | 340,000 | **Receivables** | | |
| Decrease (increase) in Net Unearned Premiums | $ | 7,000 | Other Insurers | $ | 20,000 |
| **Net Premiums Earned** | $ | 347,000 | Other | $ | 5,000 |
| Gross Claims and Adjustment Expenses | $ | 225,000 | **Recoverable from Reinsurers** | | |
| Ceded Claims and Adjustment Expenses | $ | — | Unearned Premiums | $ | — |
| Net Claims and Adjustment Expenses | $ | 225,000 | Unpaid Claims and Adjustment Expenses | $ | — |
| Gross Commissions | $ | 50,000 | **Other Assets** | $ | 5,000 |
| Ceded Commissions | $ | — | | | |
| Other Expenses | $ | 42,500 | **TOTAL ASSETS** | $ | 818,000 |
| **Total Claims and Expenses** | $ | 317,500 | | | |
| | | | **LIABILITIES AND EQUITY** | | |
| **Underwriting Income (Loss)** | $ | 29,500 | | | |
| **Net Investment Income** | $ | 40,000 | **LIABILITIES** | | |
| **Net Income (Loss) before Income Taxes** | $ | 69,500 | | | |
| **Income Taxes** | $ | 24,325 | **Payables** | | |
| **NET INCOME** | $ | 45,175 | Other Insurers | $ | 3,000 |
| | | | Other | $ | 2,000 |
| | | | **Unearned Premiums** | $ | 10,000 |
| | | | **Unpaid Claims and Adjustment Expenses** | $ | 500,000 |
| | | | **Other Liabilities** | $ | 3,000 |
| | | | **TOTAL LIABILITIES** | $ | 518,000 |
| | | | **EQUITY** | | |
| | | | **Retained Earnings** | $ | 300,000 |
| | | | **TOTAL LIABILITIES AND EQUITY** | $ | 818,000 |

Table 114 shows the impact of reinsurance on a company's financial statements resulting from two simple reinsurance treaties: an excess of loss treaty and a proportional treaty. To simplify the example, we will ignore all impacts on investment income and income taxes, and, further, we will assume that the treaties run from January 1 to December 31.

For the excess of loss treaty example, it is assumed that the company will cede $20,000 in premiums and that it will recover $13,000 of losses from the reinsurer, of which $10,000 will be unpaid at the end of the year. The following chart illustrates the impact on the foregoing financial statements of such a treaty.

TABLE 114

**Excess of Loss Treaty Reinsurance**

**Statement of Income**

| | | |
|---|---|---|
| **Premium Written** | | |
| Direct | $ | 340,000 |
| Assumed | $ | — |
| Ceded | $ | 20,000 |
| **Net Premiums Written** | $ | 320,000 |
| Decrease (increase) in Net Unearned Premiums | $ | 7,000 |
| **Net Premiums Earned** | $ | 327,000 |
| Gross Claims and Adjustment Expenses | $ | 225,000 |
| Ceded Claims and Adjustment Expenses | $ | 13,000 |
| Net Claims and Adjustment Expenses | $ | 212,000 |
| Gross Commissions | $ | 50,000 |
| Ceded Commissions | $ | — |
| Other Expenses | $ | 42,500 |
| **Total Claims and Expenses** | $ | 304,500 |
| **Underwriting Income (Loss)** | $ | 22,500 |
| **Net Investment Income** | $ | 40,000 |
| **Net Income (Loss) before Income Taxes** | $ | 62,500 |
| **Income Taxes** | $ | 24,325 |
| **NET INCOME** | $ | 38,175 |

**Balance Sheet**

| | | |
|---|---|---|
| **ASSETS** | | |
| **Cash** | $ | 1,000 |
| **Investments** | | |
| Bonds and Debentures | $ | 650,000 |
| Common Shares | $ | 120,000 |
| **Receivables** | | |
| Other Insurers | $ | 20,000 |
| Other | $ | 5,000 |
| **Recoverable from Reinsurers** | | |
| Unearned Premiums | $ | — |
| Unpaid Claims and Adjustment Expenses | $ | 10,000 |
| **Other Assets** | $ | 5,000 |
| **TOTAL ASSETS** | $ | 811,000 |
| **LIABILITIES AND EQUITY** | | |
| **LIABILITIES** | | |
| **Payables** | | |
| Other Insurers | $ | 3,000 |
| Other | $ | 2,000 |
| **Unearned Premiums** | $ | 10,000 |
| **Unpaid Claims and Adjustment Expenses** | $ | 500,000 |
| **Other Liabilities** | $ | 3,000 |
| **TOTAL LIABILITIES** | $ | 518,000 |
| **EQUITY** | | |
| **Retained Earnings** | $ | 293,000 |
| **TOTAL LIABILITIES AND EQUITY** | $ | 811,000 |

In the example above, the accounts impacted are highlighted, and it is assumed that ceded premiums and claims have flowed through cash.

In the proportional example, it is assumed that 15% of premiums and claims are ceded and that a ceding commission of 25% is paid to the insurer. It is also assumed that due to the large ceded premium that invested assets (bonds) would be reduced and that 100% of the claims are unpaid at the end of the year. Table 115 charts the impact on the foregoing financial statements of such a treaty.

TABLE 115

**Proportional Reinsurance**

**Statement of Income**

| | | |
|---|---|---|
| **Premium Written** | | |
| Direct | $ | 340,000 |
| Assumed | $ | — |
| Ceded | $ | 51,000 |
| **Net Premiums Written** | $ | 289,000 |
| Decrease (increase) in Net Unearned Premiums | $ | 7,000 |
| **Net Premiums Earned** | $ | 296,000 |
| Gross Claims and Adjustment Expenses | $ | 225,000 |
| Ceded Claims and Adjustment Expenses | $ | 33,750 |
| Net Claims and Adjustment Expenses | $ | 191,250 |
| Gross Commissions | $ | 50,000 |
| Ceded Commissions | $ | (12,750) |
| Other Expenses | $ | 42,500 |
| **Total Claims and Expenses** | $ | 271,000 |
| **Underwriting Income (Loss)** | $ | 25,000 |
| **Net Investment Income** | $ | 40,000 |
| **Net Income (Loss) before Income Taxes** | $ | 65,000 |
| **Income Taxes** | $ | 24,325 |
| **NET INCOME** | $ | 40,675 |

**Balance Sheet**

| | | |
|---|---|---|
| **ASSETS** | | |
| **Cash** | $ | 30,750 |
| **Investments** | | |
| Bonds and Debentures | $ | 599,000 |
| Common Shares | $ | 120,000 |
| **Receivables** | | |
| Other Insurers | $ | 20,000 |
| Other | $ | 5,000 |
| **Recoverable from Reinsurers** | | |
| Unearned Premiums | $ | — |
| Unpaid Claims and Adjustment Expenses | $ | 33,750 |
| **Other Assets** | $ | 5,000 |
| **TOTAL ASSETS** | $ | 813,500 |
| **LIABILITIES AND EQUITY** | | |
| **LIABILITIES** | | |
| **Payables** | | |
| Other Insurers | $ | 3,000 |
| Other | $ | 2,000 |
| **Unearned Premiums** | $ | 10,000 |
| **Unpaid Claims and Adjustment Expenses** | $ | 500,000 |
| **Other Liabilities** | $ | 3,000 |
| **TOTAL LIABILITIES** | $ | 518,000 |
| **EQUITY** | | |
| **Retained Earnings** | $ | 295,500 |
| **TOTAL LIABILITIES AND EQUITY** | $ | 813,500 |

Again, accounts impacted are highlighted.

## COMMUTATION OF CLAIMS

Commuting a claim is a process in which one party is relieved of its obligations in respect of the claim in exchange for a cash payment. This can happen between insurers and individual claimants, with insurers under financial stress or between insurers and reinsurers. This section addresses the commutation of claims between insurers and reinsurers.

Reinsurance contracts may contain a commutation clause, which requires the insurer to relieve the reinsurer of its obligations in exchange for a cash payment. These clauses are typically more common in contracts that cover long-tail liabilities, and the purpose is generally to allow the reinsurer to settle its obligations within a finite period.

The primary motivation for a reinsurer to commute is to bring certainty to its results; however, there are other benefits to the reinsurer associated with commutation, including capital relief and savings in claims adjusting and administrative costs. From an insurer's point of view, there can be a benefit from commutation if there is a concern in respect of the creditworthiness of the reinsurer — the receipt of cash extinguishes this risk. Insurers also will save administrative costs. Insurers, however, once they receive the cash payment will be subject to the risk of any future adverse loss experience in respect of the commuted liability and will have to hold capital for this risk.

Claims subject to commutation typically have expected cash flows that extend into the future. Therefore, the settlement of these claims requires that financial and non-financial considerations associated with the future cash flows be contemplated. Financial considerations can include items such as the amount and timing of cash flows, the discount rate to be used, cost inflation, the potential for volatility in cash flows and income tax. Non-financial considerations can include such items as regulatory involvement or legal court decisions of the claimant(s), current and future entitlements of the claimant(s), and unfavorable court decisions.

The commutation of a block of claims under a reinsurance agreement typically will involve the actuary for the insurer and the actuary for the reinsurer. Each actuary will be charged with estimating the present value of the future obligations. In estimating the present value of these obligations, the actuary must consider the following:

- The nominal or undiscounted value of future loss and LAE on reported and unreported claims
- The expected timing of the payout of the undiscounted loss and LAE
- Expected investment income on assets supporting these cash flows
- Income tax
- An appropriate risk load to provide for volatility

An example calculation of a commuted value of a portfolio is illustrated below.

TABLE 116

**Estimate of Commuted Value of Claims**
**December 31, 2018**

| | Total | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|
| Estimated Payments in Period | $1,000,000 | $350,000 | $150,000 | $125,000 | $100,000 | $100,000 | $75,000 | $50,000 | $50,000 |
| Payment Timing | | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 |
| Duration Matched Risk Free Rate | | 2.00% | 2.00% | 2.00% | 2.00% | 2.00% | 2.00% | 2.00% | 2.00% |
| Present Value Claims Cash Flow | $ 950,223 | $346,552 | $145,610 | $118,962 | $93,304 | $91,474 | $67,261 | $43,961 | $43,099 |
| Undiscounted Future Payments remaining | | $1,000,000 | $650,000 | $500,000 | $375,000 | $275,000 | $175,000 | $100,000 | $50,000 |
| Required Margin | | 10.00% | 10.00% | 10.00% | 10.00% | 10.00% | 10.00% | 10.00% | 10.00% |
| Target Capital Level at 200% | | $200,000 | $130,000 | $100,000 | $75,000 | $55,000 | $35,000 | $20,000 | $10,000 |
| Risk Cost of Capital | | 9.00% | 9.00% | 9.00% | 9.00% | 9.00% | 9.00% | 9.00% | 9.00% |
| Cost of Capital in Period | | $18,000 | $11,700 | $9,000 | $6,750 | $4,950 | $3,150 | $1,800 | $900 |
| Timing | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Discount Rate | | 2.00% | 2.00% | 2.00% | 2.00% | 2.00% | 2.00% | 2.00% | 2.00% |
| Risk Margin | $ 53,225 | $17,647 | $11,246 | $8,481 | $6,236 | $4,483 | $2,797 | $1,567 | $768 |
| Commuted Value | $ 1,003,448 | | | | | | | | |

The starting point in estimating the commuted value is to estimate the undiscounted value of the liabilities to be commuted and the expected payout of the liabilities. This can be completed using various actuarial approaches. In Table 116, these liabilities are discounted at a risk-free rate corresponding to the average duration of each expected payment to obtain an estimate of discounted liabilities.

The risk margin is estimated based on the cost of holding capital for claims liabilities. In this case, it is assumed that required capital is based on a regulatory approach. For purposes of this example, it is assumed that a margin of 10% of the claim liabilities is required and that the company must hold target capital equal to 200% of required capital.

The cost of holding capital is equal to the risk cost of capital multiplied by the regulatory capital. The risk cost of capital can be calculated in various ways, such as by calculating a weighted average cost of capital less the risk-free rate. The total risk margin is the present value of the annual cost of capital amounts discounted at the risk-free rate. The commuted value is calculated as the sum of the discounted value of the liabilities plus the risk margin.

PREMIUM LIABILITIES

The policy liabilities of a property/casualty insurance company at a particular valuation date consist of claims liabilities and premium liabilities. Claims liabilities provide for events that have happened prior to the valuation date, whether reported or not. Premium liabilities provide for events that will occur after the valuation date on policies in force on the valuation date, i.e., premium liabilities are the liabilities associated with the unexpired portion of an insurance or reinsurance contract.

Net premium liabilities are not separately identified on an insurer's balance sheet as a single item but rather are derived by considering the following items:

1. Net unearned premiums
2. Net loss and LAE costs (external and internal) after the valuation date on in-force policies
3. Expected excess of loss reinsurance costs after the valuation date on in-force policies
4. Costs of servicing the in-force policies
5. Provision for premium adjustments
6. Contingent commissions adjustments
7. Unearned reinsurance commissions
8. Deferred policy acquisition expenses (DPAE)
9. Premium deficiency

A property/casualty insurer typically records items 1, 6, 7, and 9 as liabilities on its balance sheet, item 8 is recorded as an asset on the balance sheet, and item 5 can be an asset or a liability. Items 2, 3, and 4 are not recorded on the insurer's financial statements but are used by the Appointed Actuary in testing the adequacy of the recorded premium liabilities.

In testing the adequacy of premium liabilities, the Appointed Actuary is comparing an estimate of ultimate costs associated with the unexpired portion of the policy against premium liabilities recorded by the company. The elements of this calculation are discussed below (on a net of reinsurance basis as the gross basis is identical with the exception of the items relating to reinsurance ceded):

A. Unearned premiums: These are the company's unearned premiums net of proportional reinsurance.

B. Excess of loss reinsurance costs: This is the expected costs of excess of loss reinsurance associated with unexpired policies. It is typically calculated by applying the subsequent year's excess of loss reinsurance rates to the unearned premium.

C. Expected losses and external LAE: This is the expected losses (net of all reinsurance) for the unexpired portion of the policy. In Canada this is calculated on an AAP basis, i.e., discounted plus a PfAD. There are different ways to calculate this, such as reviewing historical loss and LAE ratios on an AAP basis and selecting an expected AAP loss ratio or by forecasting expected loss and LAE cash flows and then discounting these and adding a PfAD.

D. Expected internal LAE: This provides for the internal costs associated with settling these claims. This is typically calculated by reviewing historical ratios of paid internal LAE to paid losses.

E. Expected maintenance expenses: This is the cost of servicing these in-force policies, other than internal claims handling. This would provide for policy changes, customer inquiries, etc.

F. Contingent commissions: Many insurers have contingent commission arrangements with brokers, which pay additional commissions if certain volume and/or profit targets are met, and this provides for the anticipated cost of these.

G. Policy Liabilities in Connection with Unearned Premium: The total of items B to F in Table 117 below are all expenses associated with the unearned premium. The net liability recorded by the company would be the unearned premium plus unearned commissions less the deferred premium acquisition expense (DPAE) asset.

H. Equity in Unearned Premium Reserve: This is the amount by which the unearned premiums exceed the policy liabilities in connection with unearned premium.

I. Unearned commissions: These are ceding commissions from proportional reinsurance that are not yet earned by the company.

J. Maximum net DPAE: This is the maximum DPAE asset that the company may record given the expected costs and the liability already recorded. If the company, on a provisional basis, has a higher amount recorded, it must be adjusted downward to a level at or below the amount flowing from this calculation.

K. In the event that this amount is negative, the company must record a premium deficiency reserve, which is an additional liability to ensure that all future costs are provided for.

These elements are illustrated below in Table 117 on both gross and net of reinsurance bases.

TABLE 117

| **ABC Insurance Company**<br>**Illustration of Test of Adequacy of Premium Liabilities ($000's)** | |
|---|---|
| **Gross of Reinsurance Basis** | **Net of Reinsurance Basis** |

| | | | | | |
|---|---|---|---|---|---|
| A. | Unearned Premiums | $ 100,000 | A. | Unearned Premiums | $ 80,000 |
| B. | Expected Losses and External L.A.E. | $ 75,000 | B. | Excess of Loss Reinsurance Costs | $ 3,000 |
| C. | Expected Internal L.A.E. | $ 4,500 | C. | Expected Losses and External L.A.E. | $ 61,600 |
| D. | Expected Maintenance Expenses | $ 2,000 | D. | Expected Internal L.A.E. | $ 4,500 |
| E. | Contingent Commissions | $ 50 | E. | Expected Maintenance Expenses | $ 2,000 |
| F. | Policy Liabilities in Connection with Unearned Premium (B+C+D+E) | $ 81,550 | F. | Contingent Commissions | $ 50 |
| G. | Equity in Unearned Premium Reserve (A-F) | $ 18,450 | G. | Policy Liabilities in Connection with Unearned Premium (B+C+D+E+F) | $ 71,150 |
| | | | H. | Equity in Unearned Premium Reserve (A-F) | $ 8,850 |
| | | | I. | Unearned Commissions | $ 150 |
| | | | J. | Maximum Net Deferred Acquisition Expense (MAX(A-G+I,0)) | $ 9,000 |

A number of items above are included in the premium liability component of the actuarial opinion required by OSFI, as part of the Annual Return, as illustrated in Table 118. It is assumed in this case that the company booked $6.5 million as a DPAE asset, which is less than the $9 million calculated by the Appointed Actuary. Since the booked DPAE is less than the maximum DPAE calculated by the appointed actuary there is no need for a premium deficiency reserve.

TABLE 118

| Premium Liabilities (CDN in 000s) | Carried in Annual Return (Column 1) | Actuary's Estimate (Column 2) |
|---|---|---|
| (1) Gross policy liabilities in connection with unearned premiums | | 81,550 |
| (2) Net policy liabilities in connection with unearned premiums | | 71,150 |
| (3) Gross unearned premiums | 100,000 | |
| (4) Net unearned premiums | 80,000 | |
| (5) Premium deficiency | — | — |
| (6) Other net liabilities | — | — |
| (7) Deferred policy acquisition expenses | 6,500 | |
| (8) Maximum policy acquisition expenses deferrable $[(4)+(5)+(9)]_{Col.\ 1} - (2)_{Col.\ 2}$ | | 9,000 |
| (9) Unearned commissions | 150 | |

# CHAPTER 29. FINANCIAL HEALTH OF PROPERTY/CASUALTY INSURANCE COMPANIES IN CANADA

## RISK-BASED CAPITAL ADEQUACY FRAMEWORK

The Minimum Capital Test (MCT) for federally regulated property/casualty insurance companies and the Branch Adequacy of Asset Test (BAAT) for foreign property/casualty companies operating in Canada on a branch basis (foreign branch) were introduced in 2003 by the Office of the Superintendent of Financial Institutions (OSFI). To simplify their use, effective January 1, 2012, the MCT/BAAT guidelines were consolidated into one document, the MCT guideline. Under this guideline the MCT/BAAT ratios are also subject to an independent audit.

The minimum and supervisory target capital standards set out in the MCT guideline published by OSFI provide the framework within which the Superintendent assesses whether a property/casualty company, or a foreign branch, maintains adequate capital. Property/casualty companies are required, at a minimum, to maintain an MCT ratio of 100% (minimum capital ratio). OSFI has also set a “supervisory target capital ratio” of 150% to trigger early intervention and provide time for a company to take action to improve its MCT ratio, if it falls below the supervisory target.

OSFI expects companies to establish their own “internal target capital ratio” to reflect their own risk appetite and profile. An adequate internal target capital ratio provides the company with capacity to withstand unexpected losses beyond those covered by the minimum capital ratio. Notwithstanding that a property/casualty company or a foreign branch may meet these standards, the Superintendent has the authority to direct the property/casualty company to increase its capital or the foreign branch to increase the margin of assets over liabilities in Canada.

Typically, the Appointed Actuary is involved with company management in setting its internal target capital ratio. In setting it, the Appointed Actuary should consider the following, among other items:

- Nature of the company: A stock company has the ability to raise capital and thus may wish to hold enough capital to ensure that it stays above the supervisory target capital ratio (150%) but not so much that it cannot generate its required return on capital. A mutual company cannot raise capital and thus will typically wish to operate at a higher ratio.
- Size of the company: A smaller company or monoline company may have more volatile results and thus wish to hold more capital to ensure that it stays above the supervisory target capital ratio under most circumstances.
- Company’s reinsurance program: Reinsurance is a form of capital support in that it can act to reduce the volatility in loss experience. In addition, when reinsurance reduces the net claims liability, the capital required will also be reduced.

- Investment philosophy: Certain investment approaches will require greater capital. That is, if a company does not match assets and liabilities or if a company holds a greater proportion of its investments in equities, more capital may be required.

- Competitive forces: If competing companies can raise capital quickly, by issuing stocks for example, their internal target can be relatively lower as it would be easy to raise funds in an event that drains the capital.

In simple terms, the Minimum Capital Test ("MCT") compares capital available to capital required. Detailed guidelines are issued by and available from OSFI.

CAPITAL AVAILABLE

Capital available generally represents the company's total equity adjusted for certain items. It is restricted to the following, subject to qualification requirements by OSFI:

- Category A: common equity including common shares, surplus, retained earnings, earthquake, nuclear and general reserves and Accumulated other comprehensive income (AOCI);
- Category B & C: instruments issued by the institution that meet certain criteria for the respective category.

Certain items are deducted from/adjusted within the total of capital available, such as:

- Interests in non-consolidated subsidiaries and associates, and joint ventures with more than a 10% ownership interest
- Loans to non-consolidated subsidiaries, associates, and joint ventures with more than a 10% ownership interest considered as capital
- Amounts due to/from unregistered reinsurers to the extent they are not covered by deposits or letters of credit held as security
- Self-insured retentions where no collateral has been received
- The earthquake premium reserve (EPR) not used as part of financial resources to cover earthquake risk exposure
- Deferred policy acquisition expenses associates with accident and sickness (A&S) business, other than those arising from commissions and premium taxes
- Accumulated other comprehensive income on cash flow hedges
- Accumulated impact of shadow accounting
- Goodwill and other intangible assets
- Deferred tax assets that are not eligible for the 10% capital factor
- Cumulative gains and losses due to changes in own credit risk on fair values financial liabilities
- Defined benefit pension fund assets and liabilities
- Investments in treasury stock
- Reciprocal cross holdings in the common shares of insurance, banking, and financial entities
- Adjustment to owner-occupied property valuations

- Accumulated net after-tax revaluation losses in excess of gains accounted for using the revaluation model
- Other assets, as defined by OSFI, in excess of 1% of total assets

No capital factor is applied to items that are deducted from capital available.

CAPITAL REQUIRED

The total capital required is determined as the sum of capital required for insurance risk, market risk, credit risk, and operational risk, less diversification credit (divided by 1.5). See below for calculations of the capital requirements and the target level for each of these risk components. Further details on each component of capital required follow.

INSURANCE RISK

MARGINS FOR UNPAID CLAIM AND PREMIUM LIABILITY

Insurance risk is the risk arising from the potential for claims or payouts to be made to policyholders or beneficiaries. This risk arises from the present value of losses being higher than the amounts originally estimated. Factors are applied to net unpaid claims (less PfAD) and net premium liabilities (less PfAD). The factors for unpaid claims vary by class of insurance and reflect the potential for variability in the estimates of these amounts, e.g., a 15% factor is applied to personal property claims, and a 25% factor is applied to liability claims. The risk factors for premium liabilities also vary by class of insurance, e.g., property claims have a 20% factor, and Auto – Liability claims have a 15% factor. However, the accident and sickness line of insurance has margins for unearned premiums and unpaid claims to take into account possible abnormal negative variations in actual requirements.

RISK MITIGATION and RISK TRANSFER - REINSURANCE

The factor to be applied to unpaid claims and unearned premiums recoverable from registered non-associated reinsurers is treated as a combined weight under the MCT and is set at 2.5%. The factor to be applied to unearned premiums and unpaid claims ceded to unregistered reinsurers is 20%. The resulting margin can be reduced to zero by letters of credit and non-owned deposits held as security.

SELF RETENTION

Self-Insured Retention represents the portion of a loss that is retained by the policyholder. Credit maybe taken with acceptable collateral such as letters of credit which are also subject to risk factors depending on the credit rating of the issuing organization.

CATASTROPHES

In Canada there is specific guidance on the amount of capital required for earthquake exposure and nuclear risk (if written). Components of capital are required for Earthquake Premium risk and Earthquake Reserves. These maybe reduced based on specific financial resources. The financial resources may take the form of capital & surplus, earthquake premium reserve, reinsurance coverage and prior approved capital financing.

MARKET RISKINTEREST RATE RISK

Interest rate risk is the risk of loss from changes in interest rates impacting interest-rate-sensitive assets and liabilities. Interest rate risk arises due to the volatility and uncertainty of future interest rates. Assets and liabilities whose value depends on interest rates are impacted; generally, this includes fixed income assets and discounted policy liabilities. The interest rate risk margin is the difference between the change in the value of interest-rate-sensitive assets and the change in the value of interest-rate-sensitive liabilities arising from a change in interest rates plus the change in the value of allowable interest rate derivatives (only simple derivatives such as interest rate futures, forwards, and swaps may be included).

Interest-rate-sensitive assets include the following:

- Term deposits and other short-term securities (excluding cash)
- Bonds and debentures
- Commercial paper
- Loans
- Mortgages
- Mortgage-backed securities and asset-backed securities
- Preferred shares
- Interest rate derivatives held for other than hedging purposes

Assets held in mutual funds and segregated funds that are interest-rate sensitive are to be included in interest-rate-sensitive assets. All interest-rate-sensitive assets that are held by the insurer are to be included, not just those backing liabilities.

Net unpaid claims and adjustment expenses and net premium liabilities (as determined in accordance with AAP) are considered to be the interest-rate-sensitive liabilities.

The interest rate risk margin is calculated as A – B + C where:

A. Estimated change in the value of the interest-sensitive asset portfolio for an interest rate change of X%
B. Estimated change in the value of the interest-sensitive liabilities for an interest rate change X%
C. Estimated change in the value of the allowable interest rate derivatives for an interest rate change X%

The same calculation is completed for an interest rate change of –X%. The interest rate risk margin is the greater of that resulting from a change of X% or –X%.

The change in the value of the interest-rate-sensitive assets and liabilities depends on the duration of the relevant assets and liabilities. Modified duration or effective duration may be used to calculate duration; however, the selected method must be used for all interest-rate-sensitive assets and liabilities and must be used consistently from year to year. The portfolio duration is calculated as a weighted average of the duration of the individual assets or liabilities comprising the portfolio. The dollar duration is the change in the asset or liability dollar value for a given change in interest rates.

The estimated change in the value of the interest rate assets is therefore calculated as duration of the asset portfolio multiplied by fair value of the asset portfolio multiplied by X%. The estimated change in the value of the interest rate liabilities is therefore calculated as duration of the liabilities multiplied by fair value of the liabilities multiplied by X%. A simple example (ignoring the impact of interest rate derivatives) follows:

Asset duration = 6 years
Fair value of asset portfolio = $500 million
X = 1.25%

Liability duration = 3 years
Fair value of liabilities = $350 million

Capital required = 6 * $500 million *.0125 – 3 * $350 million * .0125 = $24.375 million

FOREIGN EXCHANGE RISK

The foreign exchange risk margin is 10% of the greater of either the aggregate net long positions or the aggregate net short positions in each currency, adjusted by any effective allowable foreign exchange rate hedges.

The net open positions for each currency is the sum of:

- The net spot position (all asset items less all liabilities denominated in the currency under consideration, including accrued interest and accrued expenses if they are subject to exchange rate fluctuations);
- The net forward position, valued at current spot market exchange rates or discounted using current interest rates and translated at current spot rates;
- Guarantees that will be called and are irrecoverable;
- Any fully hedged net future income/expenses not yet accrued;
- Other items representing a profit or loss in foreign currencies.

To reduce the amount of net exposure, a carve-out may be used by P&C insurer with a net open long position in a given currency. This carve-out is equal to a short position of up to 25% of the liabilities denominated in the corresponding currency, to a maximum of zero.

A simple example for calculating the foreign exchange risk is as follows:

If a P&C insurer has $200 of U.S. assets and $100 of U.S. liabilities,
Net spot position = 200 – 100 = $100
Carve-out = 25% * $100 = 25
Foreign exchange risk margin = 10% * MAX ((net spot position – carve-out), 0)
= 10% * MAX ((100 – 25), 0)
= 10% * 75
= 7.5

EQUITY, REAL ESTATE, AND OTHER MARKET RISK EXPOSURES

Equity risk is the risk of economic loss due to fluctuations in the value of equity securities. A 30% risk factor is applied to investments in common shares and joint ventures in which a company holds less than or equal to 10% ownership interest, and to the market value of equity futures, forwards, and swaps.

Real estate risk is the risk of loss due to changes in the value of a property or in real estate investment cash flows. The risk factor for owner-occupied properties is 10%, and a 20% factor is applied to real estate held for investment purposes.

Other market risk exposures include those assets comprised in the "other assets" category, where a 10% risk factor applies.

CREDIT RISK

The risk of loss resulting from a counterparty's potential inability to fully meet contractual obligations due to an insurer is defined as credit risk. This risk occurs anytime funds are extended, committed, or invested through actual or implied contractual agreements. Risk factors are as follows:

- Long-term obligations (term deposits, bonds, debentures, and loans) that are not eligible for a 0% risk factor have a risk factor between 0.25% and 18% depending on the rating and remaining term to maturity of the investment
- Short-term obligations (term to maturity less than 1 year) that are not eligible for a 0% risk factor have risk factors between 0.25% and 8% depending on the rating of the investment
- Risk factors for preferred shares are between 3% and 30% depending on the rating of the investment

STRUCTURED SETTLEMENTS, LETTERS OF CREDIT, DERIVATIVES, AND OTHER EXPOSURES

Capital required for structured settlements, letters of credit, derivatives, and other exposures are for counterparty risk not covered by the capital required for balance sheet assets. The capital required for these instruments is calculated as follows:

Capital required =
The credit equivalent amount of the instrument less collateral or guarantees
* Credit conversion factor (reflects the nature and maturity of the instrument)
* Capital factor (to reflect counterparty default risk).

The credit equivalent amount varies according to the type of instrument. The credit equivalent of a structured settlement is the current replacement cost of the settlement. For derivatives, it is the positive replacement cost plus an amount for potential future credit exposure.

OPERATIONAL RISK

Operational risk is the risk of loss arising from inadequate or failed internal processes, people and systems from external events. There are two risk drivers to determine the operational risk margin: capital required and premium volume. For the total capital required (before the operational risk margin and diversification credit), an 8.5% risk factor is applied. The following risk factors apply to insurance premiums:

- 2.50% for all direct premiums and ceded premiums written arising from third party reinsurance
- 1.75% for assumed premiums written arising from third party reinsurance

- 0.75% for assumed and ceded premiums written arising from intra-group pooling arrangements

To account for the additional pressures on people and systems due to rapid growth, additional capital is required. Thus, a 2.50% risk factor is applied to the total amount of gross premiums written in the past 12 months above a 20% growth threshold compared to the gross premiums written for the same period in the previous year. Finally, to lessen the effect of the operational risk margin for companies that have high-volume/low-complexity business, a 30% cap is applied. This is calculated in relation to the total capital required before the operational risk margin and diversification credit.

DIVERSIFICATION CREDIT

A company is not likely to incur the maximum possible loss from each type of risk simultaneously since the losses arising across risk categories are not perfectly correlated. Therefore, a diversification credit can be applied so that the total capital for the credit, market, and insurance risk requirements is lower than the sum of the individual requirements for these risks.

The formula used to calculate the diversification credit is:

$$Diversification\ credit = A + I - \sqrt{A^2 + I^2 + 2 \times R \times A \times I}$$

A = asset risk margin = capital required for credit risk + capital required for market risk (e.g., interest rate, foreign exchange, equity, real estate, and other market risks)
I = insurance risk margin
R = correlation factor between A and I = 50%

MINIMUM CAPITAL TEST

MCT = Capital Available / Capital Required, where Capital Required =

[Insurance risk margin + Market risk margin + Credit risk margin + Operational risk margin – Diversification credit] / 1.5

FOREIGN COMPANIES

Foreign companies operating in Canada on a branch basis are required to maintain an adequate margin of assets over liabilities in respect of their business in Canada. The BAAT provides a framework, similar to the MCT, by which the regulator assesses the adequacy of assets of the branch.

The BAAT is similar to the MCT in that it compares net assets available to margin required. The net assets available are equal to the excess of assets vested in Canada less total net liabilities. The margin required is the sum of amounts required for the same items as in the MCT, e.g., assets, policy liabilities, catastrophes, etc., less the diversification credit (as in the MCT), divided by 1.5.

## DYNAMIC CAPITAL ADEQUACY TESTING

Under federal regulation, the Appointed Actuary must investigate the insurer's financial condition. This is completed by way of Dynamic Capital Adequacy Testing (DCAT).

DCAT is a process of analyzing and projecting the trends of a company's financial condition, given its current financial and operating circumstances, its recent past, and its intended business plan under a variety of future scenarios. It allows the Appointed Actuary to inform company management of the likely implications of the business plan on capital and to provide guidance on the significant risks to which the company is exposed.

The principal goal of this process is to help measure capital adequacy by arming the company with the best information on courses of events that may lead to capital depletion and the relative effectiveness of alternative corrective actions. Furthermore, knowing the sources of threat, the company can strengthen the monitoring systems where it is most vulnerable and thus provide information on a continuous and timely basis.

In accordance with AAP, the DCAT process must include a base scenario and several plausible adverse scenarios. The CIA provides guidance as to the risk categories that must be examined for possible threats to capital adequacy. For property and casualty insurers, some of these risk categories include claim frequency and severity, inflation, premium increases and decreases, investment, reinsurance, and policy liabilities. However, the risk categories enumerated by the CIA are not necessarily the only ones to be examined because the circumstances of the insurer may result in the need to examine other risk categories.

The DCAT process generally consists of the following:

1. Development of a base scenario, which is typically derived from the company's business plan
2. Examination of the risk categories (mandatory or otherwise) to determine those that are relevant to the company circumstances
3. Stress-testing of the risk category in question for each relevant risk category
4. Selection of those scenarios requiring further analysis
5. Reporting on the results of the analysis

In the most general sense, solvency is the ability of an entity to honor its financial obligations. From the accounting viewpoint, solvency requires that assets equal or exceed liabilities and therefore that the total equity is non-negative. This is ascertained as of a specified date. Even though a balance sheet may show a corporate entity to be technically insolvent by this definition, legal insolvency is only determined through court or regulatory action to terminate the operations of that company. In contrast, the concept of capital adequacy envisioned by DCAT extends beyond the balance sheet at a specific date to the continued vitality of the organization.

Accordingly, in considering the solvency of insurance operations, the amount of and expected trends in surplus and other forms of available capital over the near future are of vital importance, especially in terms of risk profile of the company. It is necessary to consider the purposes of and needs for capital in relation to anticipated and possible events occurring after the statement date.

DCAT utilizes the regulatory formula for the capital adequacy standard. For insurers regulated under the Federal Insurance Companies Act or the Ontario Insurance Act, the minimum regulatory capital requirement for the purposes of the DCAT standard is based upon the MCT for a Canadian property/casualty insurer and the BAAT for a Canadian branch of a foreign property/casualty insurer. Should an insurer be subject to minimum capital requirements under other jurisdictions, the most restrictive requirement is used.

The company's financial condition is deemed satisfactory if, throughout the forecast period, it is able to meet all its future obligations under the base and all plausible adverse scenarios. In addition, under the base scenario, it must meet the target regulatory capital requirement. Otherwise the company's financial condition is deemed unsatisfactory.

DCAT analysis provides the Appointed Actuary with significant information about the financial condition of a company. The base scenario is in essence the business plan of the company throughout the forecast period. A review of the business plan should allow the Appointed Actuary to learn much about the company, including the following:

- Whether the company is growing or contracting through the forecast period and, if relevant, the level at which it is growing
- Whether the company is profitable throughout the period and whether the profits are sufficient to grow the capital base to support the growth of the company
- Planned changes in mix of business written by the company through the forecast period
- Planned changes to reinsurance programs, investment philosophies, expenses, etc.

Further, the adverse scenarios can reveal information about the risk management strategy employed by the company. For example, if a scenario that tests the impact of a change in interest rates has very little impact on the company, it is likely that the company has employed an asset/liability matching strategy to minimize the impact of this event. Adverse scenarios can also identify risks to which the company's financial condition is particularly sensitive, and the Appointed Actuary can work with management in developing mitigation strategies to manage these risks.

FINANCIAL CONDITION TESTING

Under federal regulation, the Appointed Actuary must investigate the insurer's financial condition. The financial condition of an entity refers to its prospective ability to meet its future obligations and is sometimes termed "future financial condition". The investigation is completed by way of Financial Condition Testing (FCT). The Appointed Actuary can supplement FCT with the use of other means, such as the own risk solvency assessment (ORSA).

Financial condition testing examines the effect of selected adverse scenarios on the insurer's forecasted capital adequacy. FCT is a process of analyzing and projecting the trends of a company's financial condition, given its current financial and operating circumstances, its recent past, and its intended business plan under a variety of future scenarios. It allows the Appointed Actuary to inform company management of the likely implications of the business plan on capital and to provide guidance on the significant risks to which the company is exposed.

The purpose FCT is to identify plausible threats to satisfactory financial condition, actions that would lessen the likelihood of those threats, and actions that would mitigate a threat if it materialized. FCT is one of several stress-testing processes that would fit within the insurer's overall risk management process. The FCT process allows management to understand implications the business plan has on capital and provides awareness of the significant risks to which the insurer is exposed

The FCT process generally consists of the following:

1. Development of a base scenario, which is typically derived from the company's business plan. The forecast period would be sufficiently long to be aligned with the risk emergence and the recognition of impacts and to capture the effect of management actions.
2. Development and analysis of the impact of adverse scenarios to determine those that are relevant to the company circumstances.
   The adverse scenarios may be single-risk or an integration thereof. Possible adverse scenarios include but not limited to risks associated with claims frequency and severity, policy liabilities, investment and reinsurance. They are categorized as solvency or going-concern. A solvency scenario is a plausible adverse scenario if it is credible and has a non-trivial chance of occurring whereas a going-concern scenario is more likely to occur and less severe.
   The approach used to determine adverse scenarios may be stochastic (based on statistical models), deterministic (based on judgement), or a combination of the two.
3. Identification and analysis of the effectiveness of corrective management actions to mitigate risks. Possible management actions include repricing products, reducing planned dividends and strengthening capital.
4. Reporting on the results of the analysis
5. An opinion by the Appointed Actuary. The financial condition is deemed satisfactory if throughout the forecast period, the following are met:
   - Under the solvency scenarios, the statement value of the insurer's assets is greater than the statement value of its liabilities;
   - Under going concern scenarios, the insurer meets the regulatory minimum capital ratio; and
   - Under the base scenario, the insurer meets its internal target capital ratio as determined by the ORSA.

DCAT utilizes the regulatory formula for the capital adequacy standard. The report need not include any explanation on the development and/or validity of the regulatory capital formula used. In most cases it will suffice to disclose the following:

- The applicable federal and/or provincial regulatory formula(s);

- For insurers subject to target capital requirements under multiple jurisdictions, the rationale for using the selected formula; and
- The target requirement used in the projections and the rationale.

FCT analysis provides the Appointed Actuary with significant information about the financial condition of a company. The base scenario is in essence the business plan of the company throughout the forecast period. A review of the business plan should allow the Appointed Actuary to learn much about the company, including the following:

- Whether the company is growing or contracting through the forecast period and, if relevant, the level at which it is growing;
- Whether the company is profitable throughout the period and whether the profits are sufficient to grow the capital base to support the growth of the company;
- Planned changes in mix of business written by the company through the forecast period;
- Planned changes to reinsurance programs, investment philosophies, expenses, etc.

Further, the adverse scenarios can reveal information about the risk management strategy employed by the company. For example, if a scenario that tests the impact of a change in interest rates has very little impact on the company, it is likely that the company has employed an asset/liability matching strategy to minimize the impact of this event. Adverse scenarios can also identify risks to which the company's financial condition is particularly sensitive, and the Appointed Actuary can work with management in developing mitigation strategies to manage these risks.

INDUSTRY RESEARCH

*Market-Security Analysis and Research, Inc.*

Market-Security Analysis and Research, Inc. (MSA) is a Canadian analytical research firm that is focused on the Canadian insurance industry.[211] While MSA is not a rating agency, it publishes many reports and also offers a software tool that allows for comprehensive analysis of company and industry results in significant detail over a number of years. Canadian insurers are also monitored by major rating agencies such as A.M. Best, Standard & Poor's, and Moody's.

Individual company reports are presented by way of a number of exhibits. The first exhibit (Exhibit 1) is titled "Key Company Information." It presents key information about the company's type of license, ownership, and distribution category; identification of the appointed actuary and external auditor; and the name of the CEO or chief agent. There is additional information included in this exhibit for companies with publicly traded parents.

[211] MSA Research Inc. http://www.msaresearch.com/.

Key financial indicators are included in Exhibit 2. A number of regulatory tests and early warning indicators are included, such as:

- The MCT/BAAT ratio
- Profitability measures such as return on equity, return on revenue, return on assets after tax, and insurance return on net premium earned
- Liabilities as a percentage of liquid assets
- Net loss reserves to equity
- One-year loss development to equity
- Overall net leverage

The above measures are used by OSFI and other regulatory bodies as early warning solvency indicators. In its reports, MSA flags results that fall outside of OSFI's acceptable range. The MCT/BAAT ratios are OSFI's Risk-Based Capital adequacy assessment and are important measures of a company's financial position. If a company fails this test, it will likely be the subject of regulatory intervention. Often companies fail certain other ratios without being in distress; thus, the Appointed Actuary should consider results across all of the tests as a whole when making judgments about a company's financial position.

There are also supplementary ratios calculated to provide more summary-level information about the company, including:

- Investment yield (including realized capital gains)
- Change in net premium written
- Change in gross premium written
- Change in equity
- AOCI to equity
- Reinsurance recoverable to equity
- Net underwriting leverage ratio (ratio of net premiums written to equity)
- Two-year combined ratio
- Overall diversification score

# PART VIII. THE FUTURE OF SAP

## INTRODUCTION TO PART VIII

Regulation and financial reporting of insurance companies has evolved over time. The original FASB accounting standard for insurance entities (FAS 60) was discussed and developed in the 1970s and adopted in June 1982. The NAIC codified its statutory accounting principles, effective January 1, 2001. Today we see the implications of the work performed by the FASB and the IASB on insurance contracts accounting and the NAIC's Solvency Modernization Initiative (SMI). So, what is driving change today and where are we heading?

## CHAPTER 30. THE FUTURE OF FINANCIAL REPORTING AND SOLVENCY MONITORING OF INSURANCE COMPANIES

THE NAIC AND THE FINANCIAL SECTOR ASSESSMENT PROGRAM

In Part VI. *Differences from Statutory to other Financial/Regulatory Reporting Frameworks in the U.S.,* we discussed the reasons behind the development of new accounting standards for insurance contracts by the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB), . The National Association of Insurance Commissioners' (NAIC) Solvency Modernization Initiative was started in part because of pressure to conform to new and evolving international standards. In November 2008 at a G20 summit, during the global financial crisis, the G20 members agreed to undergo periodic peer reviews of their financial services regulatory regimes. This peer review process was developed by the International Monetary Fund and World Bank in response to the financial crisis in the late 1990s but had mainly been applied to developing countries. This peer review process is called the Financial Sector Assessment Program (FSAP).

The NAIC participated in the FSAP process during 2010 for the first time, and again in 2015. The assessment process benchmarked the U.S. insurance regulatory regime against the Insurance Core Principles (ICPs) developed and published by the International Association of Insurance Supervisors (IAIS). The results of the 2010 assessment were generally favorable but were based on the ICPs published in 2003. In October 2011, the IAIS published a revised set of ICPs, with amendments to certain of the ICPs published through November 2018. This revised set of ICPs were used to perform the 2015 FSAP review.

The 2015 FSAP concluded that while there were improvements since 2010, there remained difficulties in assessing the health of the U.S. insurance sector. In particular:

*"Capital adequacy at legal entity level, measured by the regulators' risk-based capital (RBC) requirements, has increased since the crisis, and the number of companies breaching regulatory levels has declined. However, capital adequacy ratios are hard to interpret due to valuation rules, regulatory arbitrage via captives, and lack of regulatory capital adequacy measures at group level."*

The report also noted that one area that still poses a challenge is ICP 14, Valuation. ICP 14 states the following:

"The context and purpose of the valuation of assets or liabilities of an insurer are key factors in determining the values that should be placed on them. This ICP considers the valuation requirements that should be met for the purpose of the solvency assessment of insurers within the context of IAIS risk-based solvency requirements that reflect a total balance sheet approach on an economic basis and address all reasonably foreseeable and relevant risks."

ICP 14 also states that "an economic value should reflect the prospective valuation of the future cash flows of the asset or liability allowing for the riskiness of those cash flows and the time value of money."

Some may argue the current statutory valuation of property/casualty liabilities does not comply with this statement as it doesn't reflect the time value of money, except in limited circumstance, nor the underlying risk. The 2015 FSAP found that the U.S. insurance regulatory regime only partially observed this ICP. It recommended:

*"Allowing for conservatism explicitly in a margin over current estimate would increase transparency. The explicit decomposition of reserves into a current estimate and a margin over current estimate allows assessment of the overall conservatism for different lines of products. This would allow a recalibration of the valuation standard for products where reserves are overly conservative or not sufficient."*

## COMFRAME, SOLVENCY II AND THE FEDERAL INSURANCE OFFICE

In addition to the revised set of ICPs, the IAIS has been developing a Common Framework for the Supervision of Internationally Active Insurance Groups, commonly referred to as ComFrame. The final framework was published in November 2019.

U.S. regulators have expressed concerns about the valuation approach under ComFrame which requires a margin over the current estimate for valuation purposes, also known as a GAAP plus valuation approach. U.S. regulator have instead proposed allowing an aggregation approach based on current local requirements in determining the required amount of group capital. As a compromise there will be a five year monitoring period to assess GAAP plus valuation and its effect on the prescribed capital requirement versus the aggregated approach proposed by U.S. regulators.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 created the Federal Insurance Office (FIO), which has several functions. The relevant functions are:

- To coordinate federal efforts and develop federal policy on prudential aspects of international insurance matters, including representing the U.S., as appropriate, in the IAIS and assisting the Treasury Secretary in negotiating covered agreements (bilateral or multilateral agreements entered into by the U.S. regarding prudential measures with respect to the business of insurance or reinsurance)
- To determine whether state insurance measures are preempted by covered agreements
- To consult with the states (including state insurance regulators) regarding insurance matters of national importance and prudential insurance matters of international importance

Effectively, this gives the FIO the power to act like a national regulator for purposes of negotiating the contents of ComFrame and its group capital requirement as it can preempt state law if the director of the FIO determines that the measure “results in less favorable treatment of a non-U.S. insurer domiciled in a foreign jurisdiction that is subject to a covered agreement than a U.S. insurer domiciled, licensed, or otherwise admitted in that State,” and state law “is inconsistent with a covered agreement.”

In addition to the FIO, Dodd-Frank gave the Federal government powers to regulate systemically important financial institutions (SIFI). What financial institutions are systemically important is determined by the Financial Stability Oversight Council, a body set up by Dodd-Frank to reduce the risk of any one company being “too big to fail.”

## THE FUTURE

All the above activities by the NAIC, FASB, IASB, IAIS, and the FIO leave us with a very muddy picture of how insurance liabilities will be evaluated in the future. The common theme, though, is change, as each proposed framework differs from the current valuation of insurance liabilities today. Several scenarios could play out that would leave us with several different frameworks in place. Yet, any of these changes individually would have one common result: a greater need for actuaries to perform the additional calculations and explain the drivers of the results.

## Glossary of Terms

**Accepted Actuarial Practice (AAP)**

The manner of performing work in accordance with rules and standards of practice as promulgated by the relevant actuarial body, e.g., American Academy of Actuaries in the U.S. or the Canadian Institute of Actuaries in Canada.

**Accident year**

The calendar year in which the accident occurs and/or the loss is incurred.

**Accumulated other comprehensive income (AOCI)**

The cumulative value of other comprehensive income or the total of unrealized gains and losses on (i) available-for-sale assets such as loans, bonds and debentures and equities; (ii) derivatives designated as cash flow hedges; (iii) foreign currency translation; and (iv) share of other comprehensive income of subsidiaries, associates, and joint ventures. AOCI is included on the balance sheet of a Canadian insurance company in equity.

**Actuarial Opinion Summary (AOS)**

A confidential document containing the appointed actuary's range of unpaid claim estimates and/or point estimate, as calculated by the appointed actuary, in comparison to the company's recorded reserves on both a net and gross of reinsurance basis.

**Actuarial Standards Board (ASB)**

"The Actuarial Standards Board (ASB) establishes and improves standards of actuarial practice. These Actuarial Standards of Practice (ASOPs) identify what the actuary should consider, document, and disclose when performing an actuarial assignment. The ASB's goal is to set standards for appropriate practice for the U.S."[212]

**Actuarial Standards of Practice (ASOP)**

"ASOPs are intended to provide actuaries with a framework for performing professional assignments and to offer guidance on relevant issues, recommended practices, documentation, and disclosure."[213]

**Adjusting and other (A&O) expenses**

One of the two components of loss adjustment expense, with defense and cost containment being the other. A&O generally include all expenses associated with the adjusting and recording of insurance claims, other than those included with defense and cost containment expenses.

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[212] Actuarial Standards Board. *"About the ASB."* http://www.actuarialstandardsboard.org/aboutasb.asp , 2019.
[213] Actuarial Standards Board, *Introduction to the Actuarial Standards of Practice*, http://www.actuarialstandardsboard.org/pdf/asops/Introduction_113.pdf , October 2008.

According to the 2011 National Association of Insurance Commissioners *Annual Statement Instructions Property/Casualty*, A&O expenses are "those expenses that are correlated with claim counts or general loss adjusting expenses."[214]

**Alien insurance company**

A company doing business in the U.S. that is incorporated under the laws of a country outside the U.S.

**Allocated loss adjustment expenses (ALAE)**

Expenses that can be readily assigned to a specific claim, such as attorney fees.

**A.M. Best Company**

A global credit rating agency that serves the financial and health care service industries. In the insurance area, Best's Credit Ratings cover property/casualty, life, annuity, reinsurance, captive, title and health insurance companies as well as health maintenance organizations. A.M. Best covers thousands of insurance entities across the globe.

**American Academy of Actuaries Committee on Property and Liability Financial Reporting (COPLFR)**

"This committee monitors activities regarding financial reporting related to property and liability risks, reviews proposals made by various organizations affecting the actuarial aspects of financial reporting and auditing issues related to property and liability risks, and evaluates property and liability insurance and self-insurance accounting issues."[215]

**Amortized cost**

"The cost of bonds less the amortization of premium, or plus the accumulated accrual of discount, from the date of purchase to the date of valuation."[216]

**Annual Statement**

A filing made annually by an insurance company to each state insurance department in which it writes business. The filing is prepared under Statutory Accounting Principles and includes the company's financial statements and various supporting schedules and exhibits.

**Appointed actuary**

"A qualified actuary appointed the Board of Directors, or its equivalent, or by a committee of the Board to render a statement of actuarial opinion. 'Qualified Actuary' is a person who is either:

i. A member in good standing of the Casualty Actuarial Society, or

[214] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 225.
[215] American Academy of Actuaries, "Committee on Property and Liability Financial Reporting," http://www.actuary.org/committees/dynamic/COPLFR, 2019.
[216] Insurance Accounting & Systems Association, *Property Casualty Insurance Accounting*, 2006.

ii. A member in good standing of the American Academy of Actuaries who has been approved as qualified for signing casualty loss reserve opinions by the Casualty Practice Council of the American Academy of Actuaries."[217]

**Assets**

Resources obtained or controlled by a company as a result of past events that have a probable future economic benefit to the company.

**Authorized control level (ACL)**

The level of Risk-Based Capital within which the state regulatory authority is authorized, but not required, to take control of an insurance company. This level is triggered when a company's total adjusted capital is between 70% and 100% of the ACL benchmark.

**Authorized reinsurer**

A reinsurer that is licensed or approved to transact insurance business in a jurisdiction; an unauthorized reinsurer is not.

**Balance sheet**

The financial statement that presents all of a company's assets and liabilities as of a specific point in time.

**Branch Adequacy of Asset Test (BAAT)**

Guideline for federally regulated property/casualty insurance companies published by the Office of the Superintendent of Financial Institutions that provides the framework within which the Superintendent assesses whether a property/casualty company, or a foreign branch, maintains adequate capital.

**Canadian Institute of Actuaries (CIA)**

The national organization of the Canadian actuarial profession.

[217] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 10.

**Chartered Professional Accountants Canada (CPA Canada)**

"Chartered Professional Accountants of Canada (CPA Canada) is one of the largest national accounting organizations in the world and is a respected voice in the business, government, education and non-profit sectors.

CPA Canada is a progressive and forward-thinking organization whose members bring a convergence of shared values, diverse business skills and exceptional talents to the accounting field. Domestically, CPA Canada works cooperatively with the provincial and territorial CPA bodies who are charged with regulating the profession. Globally, it works together with the International Federation of Accountants and the Global Accounting Alliance to build a stronger accounting profession worldwide. As one of the world's largest national accounting bodies, CPA Canada carries a strong influential voice and acts in the public interest."[218]

**Cap**

"An agreement obligating the seller to make payments to the buyer, each payment under which is based on the amount, if any, that a reference price, level, performance or value of one or more Underlying Interests exceed a predetermined number, sometimes called the strike/cap rate or price."[219]

**Carryforward of net operating losses**

An accounting practice used when an insurance company has net operating losses in one financial year and expects those losses to offset gains in the future, thereby reducing future tax liability.

**Carrying value**

An initial cost of an investment adjusted over time based on the reporting entity's share in the company's income.

**Case development**

Increases or decreases in the reserves for known claims as additional information becomes available.

**Case incurred loss**

The reported value of a known claim equal to the sum of paid losses plus case outstanding losses.

[218] Chartered Professional Accountants Canada, "About Chartered Professional Accountants of Canada (CPA Canada)," https://www.cpacanada.ca/en/the-cpa-profession/about-cpa-canada, 2019.
[219] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 373.

**Case outstanding loss**

The reserve for a known claim, or case reserve, generally established by the company's claims administrator(s)/handler(s) based either on the facts of the particular claim or based on formula.

**Case reserves**

See definition for *case outstanding loss*

**Cash flow statement**

A statement that presents a company's operations strictly from a cash perspective.

**Ceded reinsurance premiums payable**

Premiums that are owed to reinsurers relating to ceded reinsurance.

**Ceding commission**

A fee paid by the reinsurer to the insurance company (ceding company) for the reinsurance transaction. The fee is generally expected to reimburse the insurer for policy acquisition expenses.

**Certified public accountant (CPA)**

"Professional accountant who has passed the uniform CPA examination administered by the American Institute Of Certified Public Accountants, and has fulfilled the educational and work related experience requirements for certification."[220]

**Claim frequency**

The rate of claim occurrence, typically calculated as the ratio of claim counts to exposures.

**Claim severity**

The average cost of a claim, typically calculated as the ratio of losses to claim counts.

**Claims-made policy**

An insurance policy covering claims that arise on or after the policy retroactive date and are reported during the term of the policy. The retroactive date may be a date many years before the purchase of the policy. Therefore, a claims-made policy may cover claims made today that result from actions that occurred any time after the retroactive date.

**Collar**

[220] BusinessDictionary.com, *Definitions,* http://www.businessdictionary.com/definition/certified-public-accountant-CPA.html, 2019.

"An agreement to receive payments as the buyer of an Option, Cap or Floor and to make payments as the seller of a different Option, Cap or Floor."[221]

**Common capital stock**

A surplus account that is equal to the par value of common stocks that were issued.

**Common stock**

A type of stock holding that confers voting privileges and may pay a dividend, though the dividend is not guaranteed.

**Commutation of ceded reinsurance**

The agreement to fully settle all current and future liabilities associated with a reinsurance agreement for a set payment from the reinsurer.

**Commuting a claim**

A process in which one party is relieved of its obligations in respect of the claim in exchange for a cash payment.

**Contingent commissions**

Additional commissions paid by an insurance company to its broker if certain volume and/or profit targets are met.

**Contingent liabilities**

Amounts for which the insurance company may be held responsible but for which the balance is not currently determinable.

**Credit risk**

A risk that the counterparty will default (or not pay in whole or in part) and the estimation risk associated with amounts recorded for those receivables.

**Defense and cost containment (DCC)**

One of the two components of loss adjustment expense, with adjustment and other expense being the second. DCC generally includes defense, litigation and medical cost containment expenses, whether internal or external. According to the 2011 NAIC *Annual Statement Instructions Property/Casualty*, DCC expenses are "those that are correlated with the loss amounts."[222]

[221] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 373.
[222] Ibid., page 225.

**Deferred acquisition costs (DAC)**

An asset that is established under U.S. Generally Accepted Accounting Principles to defer the recognition of acquisition expenses to match the recognition of revenue of insurance companies.

**Deferred tax assets (DTAs)**

Expected future tax benefits related to amounts previously recorded in the statutory financial statements and not expected to be reflected in the tax return as of the reporting date.

**Derivatives**

Financial contracts between two parties for which the value is dependent upon the performance of other assets or variables. Examples include options, warrants, caps, floors, collars, swaps, forwards and futures.

**Discount rate**

The term commonly used when referring to the rate at which the present value of cash flows are calculated.

**Discovery year**

A calendar year in which a loss or damage is discovered.

**Dividends received deduction (DRD)**

In the case of corporate stockholders, DRDs are certain allowances that are made to reduce tax on dividends to avoid triple taxation when the Company in turn dividends earnings to their investors.

**Dynamic Capital Adequacy Testing (DCAT)**

A process of analyzing and projecting the trends of a company's financial condition given its current financial and operating circumstances, its recent past, and its intended business plan under a variety of future scenarios.

**Earned but unbilled premiums**

Estimated adjustments that will occur to the premium on policies where the actual amount of premium depends on an exposure measure (such as payroll) that is unknown until the end of the policy period.

**Encumbrance**

An impediment or claim on an asset made by a party that restricts the value of asset from complete use by the owner until the owner clears its obligation to the other party. An example is a lien on a property.

**Equity method**

A method under which investments in insurance company subsidiary, controlled and affiliated entities (SCAs) are recorded based on the reporting entity's proportionate share of audited statutory equity of the SCA's balance sheet, adjusted for any unamortized goodwill.

**Excess treaty reinsurance**

A contract under which the reinsurer responds to claims during the treaty period excess of a specified threshold to a specified limit.

**Exhibit of Capital Gains (Losses)**

An Annual Statement exhibit that shows the split of the gains (losses) between those gains (losses) that were realized on the sale or maturity of an asset and those due to impairments.

**Exhibit of Net Investment Income**

An Annual Statement exhibit that differentiates between the amount of income collected and the amount of income earned in the year and describes the deductions for investment expenses and other costs.

**Facultative reinsurance**

A reinsurance contract that is negotiated separately for each insurance policy that is reinsured. Facultative reinsurance is purchased for individual risks that are not covered, or not adequately covered, by the insurer's treaty reinsurance.

**Fair value**

The value at which an asset or liability could be bought or sold for in the open market.

**Financial Accounting Standards Board (FASB)**

A private organization providing authoritative accounting guidance for non-governmental entities. It has the responsibility of developing and establishing U.S. Generally Accepted Accounting Principles, with the Securities and Exchange Commission operating in an overall monitoring role over the application of the accounting standards by public companies.

**Floor**

"An agreement obligating the seller to make payments to the buyer, each payment under which is based on the amount, if any, that a predetermined number, sometimes called the strike/floor rate or price exceeds a reference price, level, performance or value of one or more Underlying Interests."[223]

[223] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 373.

**Forward**

"An agreement (other than a Future) to make or take delivery of, or effect a cash settlement based on, the actual or expected price, level, performance or value of one or more Underlying Interests."[224]

**Future**

"An agreement traded on an exchange, Board or Trade or contract market to make or take delivery of, or effect a cash settlement based on, the actual or expected price, level, performance or value of one or more Underlying Interests."[225]

**General expenses**

Insurance company operating and administrative expenses other than those that relate directly to the acquisition of the business or ongoing policy maintenance costs incurred by an insurance company.

**General Interrogatories**

A series of questions that the insurance company is required to respond to within its Annual Statement.

**Generally Accepted Accounting Principles (GAAP)**

An accounting framework that provides a consistent set of rules under which publicly traded and privately held companies report their financial transactions.

**Goodwill**

An intangible asset that results from the excess of the price paid for an acquired entity and its book value (for U.S. SAP) or fair value (for U.S. GAAP). It represents the value perceived by the buyer in the company for things like customer relationships or trade name, which are not physical or material assets but can be bought or sold due to their relevance to the company's future profitability.

**Governmental Accounting Standards Board (GASB)**

"…the independent private-sector organization…, that establishes accounting and financial reporting standards for U.S. state and local governments that follow generally accepted accounting principles (GAAP)."[226]

**Income statement**

[224] Ibid., page 373.
[225] Ibid., page 374.
[226] GASB, "About the GASB" https://www.gasb.org/jsp/GASB/Page/GASBSectionPage&cid=1176168081485, 2019.

A statement that describes a company's gain or loss in net income during a specific time period.

**Incurred but not reported (IBNR)**

The reserve for claims that have been incurred but not yet reported to the insurance company. IBNR includes a provision for development on known claims ("case development"), a provision purely for those claims that are incurred but not yet reported to the insurance carriers ("pure IBNR"), and reopened claims.

**Insurance Expense Exhibit (IEE)**

An Annual Statement exhibit that enables regulators to dive deeper into an insurance company's profitability by examining profitability by line of business on a direct and net of reinsurance basis.

**Insurance Regulatory Information System (IRIS)**

A collection of analytical solvency tools and databases designed to provide state insurance departments with an integrated approach to screening and analyzing the financial condition of insurers. IRIS is used to assist each state in prioritizing which companies need additional regulatory attention.

**Insurance contract**

A contract under which one party (the insurer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder.

**Insurance or underwriting risk**

The risk of an insurance company associated with issuing insurance policies.

**Intercompany pooling**

A common arrangement among companies in a group in which each participant fully cedes all of its business to the lead insurance company of the pool, and then each participant assumes back a specific percentage of the total.

**Interest rate risk**

The risk of loss from changes in interest rates impacting interest-rate-sensitive assets and liabilities.

**Internal Revenue Service (IRS)**

The U.S. government agency that is responsible for establishing tax laws and collecting taxes.

**Internal Target Capital Ratio**

The ratio determined by an insurance company intended to provide capacity to withstand unexpected losses beyond those covered by the minimum capital ratio. Canadian property and casualty companies are asked by the Office of the Superintendent of Financial Institutions to establish their own internal target capital ratio.

**International Accounting Standards Board (IASB)**

"The Board is an independent group of experts with an appropriate mix of recent practical experience in setting accounting standards, in preparing, auditing, or using financial reports, and in accounting education…Board members are responsible for the development and publication of IFRS Standards including the *IFRS for* SMEs Standard. The Board is also responsible for approving interpretations of IFRS Standards as developed by the IFRS Interpretations Committee (formerly IFRIC)."[227]

**International Financial Reporting Standards (IFRS)**

The accounting standards promulgated by the International Accounting Standards Board typically used for financial reporting by companies licensed in countries outside of the U.S.

**Investment affiliate**

An affiliate, other than a holding company, engaged or organized primarily to engage in the ownership and management of investments for the insurer. Investment affiliates exclude entities that manage funds of organizations other than the parent.

**Letters of credit**

Issued by a bank to guarantee that payment will be made by a borrower to the lender. In the case of reinsurance transactions, a letter of credit guarantees that the reinsurer will be able to meet its obligations to the reinsured. The bank typically charges for this guarantee as a percent of its value. The percentage rate generally rises during periods of uncertain economic times.

**Liability**

An obligation that the company must fulfill based on past events or transactions that will require the use of monetary resources.

**Liquidity/Illiquidity premium**

[227] IFRS Foundation, "About the International Accounting Standards Board (Board)," https://www.ifrs.org/groups/international-accounting-standards-board/, 2019.

In a situation when the ability to readily trade the asset results in a lower discount rate being applied to the tradable asset's future cash flows than that of the privately held asset, the difference in the discount rates is the liquidity/illiquidity premium for the privately held asset.

**Loss adjustment expense (LAE)**

Expenses associated with the handling of a claim from the time it is reported to the insurance company until the time it is closed. LAE includes allocated loss adjustment expenses (ALAE) and unallocated loss adjustment expenses (ULAE). The National Association of Insurance Commissioners currently uses the defense and cost containment (DCC) and adjusting and other (A&O) expenses to comprise the two forms of LAE. While LAE in total is equivalent under either the ALAE/ULAE or DCC/A&O definitions, it is the segregation of expenses between the two that differs. DCC generally includes defense, litigation and medical cost containment expenses, whether internal or external, and A&O includes all expenses associated with adjusting and recording policy claims, other than those included with DCC.

**Mandatorily convertible security**

A security that is required to be exchanged for another type of security at a specified price that differs from the market price at the time of conversion.

**Market-Security Analysis & Research (MSA)**

A Canadian analytical research firm that is focused on the Canadian insurance industry.

**Market valuation approach**

A valuation approach in which an investment by an insurance company in subsidiary, controlled and affiliated entities (SCAs) is based on the market value of the SCA, adjusted for the reporting entity's ownership percentage.

**Maximum net deferred policy acquisition expense (DPAE)**

A ceiling to the amount of the DPAE asset that a property/casualty insurance company may record on its financial statements in Canada.

**Minimum capital ratio**

Minimum Capital Test (MCT) ratio of 100%.

**Minimum capital requirement (MCR)**

The smallest level of capital at which a company would be permitted to operate in Canada per the Office of the Superintendent of Financial Institutions.

**Minimum capital test (MCT)**

Guideline for Federally Regulated Property and Casualty Insurance Companies published by the Office of the Superintendent of Financial Institutions that provides the framework within which the Superintendent assesses whether a property/casualty company, or a foreign branch, maintains adequate capital. MCT compares capital available to capital required.

**Mortgage-backed security (MBS)**

"Debt instrument secured by a mortgage or a pool of mortgages (but not conveying a right of ownership to the underlying mortgage). Unlike unsecured securities, they are considered 'investment grade,' and are paid out of the income generated by principle and interest payments on the underlying mortgage. It is a type of mortgage derivative."[228] We note that there can be MBS securities designated by the NAIC at 3 through 6, which would be equivalent to a below investment grade designation for bonds.

**National Association of Insurance Commissioners (NAIC)**

Serves as an organization of state regulators that facilitates and coordinates governance of insurance companies across the U.S.

**NAIC Model Investment Law**

Allows for two alternative types of investment guidelines:

1. The defined limit system of investment guidelines follows a rule-based approach and prescribes specific quantitative limits for the invested assets that a company may hold.
2. The prudent person system of investment guidelines follows a principles-based approach and requires an insurance company to develop its own investment guidelines.

**NAIC's Securities Valuation Office (SVO)**

"The National Association of Insurance Commissioners' Securities Valuations Office (SVO), one of three groups within the Capital Markets & Investment Analysis Office, is responsible for the day-to-day credit quality assessment of securities owned by state regulated insurance companies. Insurance companies report ownership of securities to the Capital Markets and Investment Analysis Office when such securities are eligible for filing on Schedule D, DA or BA of the NAIC Financial Statement Blank."[229]

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[228] BusinessDictionary.com, *Definitions,* http://www.businessdictionary.com/definition/mortgage-backed-security.html, 2019.

[229] Per the description of the Securities Valuation Office on the NAIC and The Center for Insurance Policy and Research website, http://www.naic.org/svo.htm, 2019.

**Net income/Net loss**

The difference between the amount of the revenues and expenses during the period. It is referred to as net income if it is positive and net loss if it is negative.

**Net investment income earned**

Interest and dividends received on investment assets held over the course of the year, net of investment expenses including any associated taxes.

**Net realized capital gain (loss)**

Income received related to changes in the value of investment assets that are held under U.S. SAP, net of any associated taxes.

**Nonadmitted assets**

Assets that are not recognized by state insurance departments in evaluating the solvency of an insurance company for statutory accounting purposes.

**Notes to Financial Statements**

Qualitative and quantitative disclosures made by a company to further explain the balances shown in its financial statements.

**Off-balance sheet and other items**

Amounts that are not recorded by the insurance company in its statutory financial statements yet still represent assets and/or potential liabilities of the insurance company and therefore expose the company to risk.

**Office of the Superintendent of Financial Institutions (OSFI)**

The organization that supervises all federally regulated financial institutions, monitors federally regulated pension plans and provides actuarial advice to the Government of Canada.

**Option**

"An agreement giving the buyer the right to buy or receive, sell or deliver, enter into, extend or terminate, or effect a cash settlement based on the actual or expected price, level, performance or value of one or more Underlying Interests."[230]

**Other comprehensive income (OCI)**

Changes in unrealized gains and losses on (i) available for sale assets such as loans, bonds and debentures and equities; (ii) derivatives designated as cash flow hedges; (iii) foreign currency translation; and (iv) share of OCI of subsidiaries, associates and joint ventures. OCI is required by U.S. GAAP and International Financial Reporting Standards.

[230] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 373.

**Overdue authorized reinsurance**

Reinsurance for which the amount of paid loss and loss adjustment expense recoverable is more than 90 days past due for reasons other than dispute between the insurance company and the reinsurer.

**Own risk self-assessment (ORSA)**

The entirety of the processes and procedures employed to identify, assess, monitor, manage and report the short- and long-term risks a (re) insurance undertaking faces or may face and to determine the own funds necessary to ensure that the undertaking's overall solvency needs are met at all times.

**Paid losses**

Amounts paid by the insurance carrier for insured claims.

**Par value**

An amount set by the issuer of a stock when the stock is initially offered, which serves as a minimum value for which the stock can be sold in that initial offering.

**Policyholder dividend**

A return to the policyholder of a portion of the premium that was originally paid by the policyholder. There are typically state requirements that must be met for a company to pay dividends.

**Preferred stock**

A stock holding that does not confer voting privileges but usually provides a guarantee on dividends to be paid and usually has preference to common stock in the event of liquidation.

**Premium deficiency reserve**

A reserve that must be recorded when the unearned premium of in-force business is not sufficient to cover the losses, loss adjustment expense and other expenses that will arise when that premium is earned.

**Proportional treaty**

A contract under which the reinsurer receives a set proportion of all premiums subject to the treaty, net of ceding commission, and in return pays the same proportion of all claims subject to the treaty.

**Protected cell company**

A company that comprises individual cells, each with its own assets, liabilities and equity, but that also has access to a part of the company's overall capital. The liability to each cell is limited such that creditors to one cell cannot look to another cell or the company as a whole for assets.

**Provision for adverse deviation (PfAD)**

A provision required in Canada for adverse deviation in a company's loss reserves determined by increasing the value of variables used in the reserve estimation process.

**Provision for reinsurance**

A penalty for reinsurance recoverables that may not be collectible. The amount of this provision is a reduction to surplus. This penalty applies to unauthorized reinsurers that do not provided full collateral, that are slow to pay or that have disputed amounts owed to the ceding company, as well as the authorized reinsurers that are slow to pay or that have disputed amounts that are owed to the ceding company.

**Regulation S-X**

The Securities and Exchange Commission's regulation that contains general instructions to all companies around the composition and presentation of financial statements

**Reinsurance contract**

Oftentimes considered insurance for insurance companies, a contract under which one party (the insurer or reinsured) transfers risk to another party (the reinsurer) to protect the insurer (reinsured) from financial loss.

**Replication (synthetic asset) transaction**

A derivative transaction entered into in conjunction with other investments to reproduce the investment characteristics of otherwise permissible investments.

**Report year**

A calendar year in which losses are reported.

**Reported loss**

Amount of paid plus case outstanding losses incurred by an insurance company. It represents the dollar value of loss known to the insurance company. Reported loss is synonymous with the term case incurred loss.

**Reserve risk**

The risk that a reporting entity's loss and loss adjustment expense reserves will develop adversely.

**Retroactive date**

The date specified in a claims-made insurance policy that defines the first day on which incurred losses are covered under the policy.

**Retroactive reinsurance**

Reinsurance that is purchased for liabilities that occurred in the past (i.e., prior to the effective date of the reinsurance policy).

**Revenue offset**

A reduction in earned premium to account for a lack of deferred acquisition costs.

**Review date**

The valuation date through which material information known to the actuary is included in forming the reserve opinion.

**Risk-Based Capital (RBC)**

A solvency framework developed by the National Association of Insurance Commissioners from which an amount of capital is determined formulaically based on the application of specified factors to an insurance company's admitted assets and liabilities recorded as of year-end. The calculated amount, or RBC, is compared to the total adjusted capital for the insurance company at year-end to determine the level, if any, of company or regulatory action required from a solvency perspective.

**Risk-Based Capital ratio (RBC ratio)**

The ratio of total adjusted capital to the authorized control level benchmark computed under the National Association of Insurance Commissioners RBC framework.

**Schedule A**

A schedule within an Annual Statement that provides information on real estate directly owned by the insurance company.

**Schedule B**

A schedule within an Annual Statement that provides information on mortgage loans owned by the insurance company that are backed by real estate.

**Schedule BA**

A schedule within an Annual Statement that provides information on other long-term invested assets owned by the insurance company. These are assets not included in any of the other invested asset schedules, such as real estate that is not owned directly by the insurance company and therefore excluded from Schedule A.

**Schedule D**

A schedule within an Annual Statement that provides information on bonds and stocks owned by the insurance company.

**Schedule DA**

A schedule within an Annual Statement that provides information on short-term investments owned by the insurance company. The schedule includes all investments whose maturities (or repurchase dates under repurchase agreement) at the time of acquisition were one year or less except those defined as cash or cash equivalents in accordance with SSAP No. 2R, *Cash, Cash Equivalents, Drafts and Short-term Investments*.

**Schedule DB**

A schedule within an Annual Statement that provides the number of contracts for each derivative and the notional amount, which represents the number of units of the underlying asset that are involved.

**Schedule DL**

A schedule within an Annual Statement that provides information on securities lending reinvested assets.

**Schedule E**

A schedule within an Annual Statement that provides information on the insurance company's cash and cash equivalents.

**Schedule F**

A schedule within an Annual Statement that provides information on an insurance company's assumed and ceded reinsurance transactions.

**Schedule P**

A schedule within an Annual Statement that provides loss and loss expenses reserves gross and net and also breaks down the total reserves by line of business and accident year.

**Schedule P interrogatories**

A series of questions that the insurance company is required to answer to provide further insight into the information reported in Schedule P.

**Schedule T**

A schedule within an Annual Statement that provides an allocation of its contents by U.S. state (50) and the District of Columbia, as well as five U.S. territories (American Samoa, Guam, Puerto Rico, U.S. Virgin Islands and Northern Mariana Islands), Canada, and "aggregate other alien" territories.

**Securities and Exchange Commission (SEC)**

The authoritative body for establishing accounting and reporting standards for publicly traded companies in the U.S.

**Solvency capital requirement (SCR)**

An amount of capital required to limit the probability of ruin over the forthcoming year to 0.5%.

**Statement of Actuarial Opinion (SAO)**

The opinion of a qualified actuary on the reasonableness of the loss and loss adjustment expense reserves recorded by a property/casualty insurance company as of December 31 each year.

**Statement of cash flows**

A statement that shows cash inflows and outflows from a company's operations, investments, financing and other sources, the net value of which is included as the value of cash and cash equivalents (and short-term investments under U.S. SAP) that is shown on the on the balance sheet at the end of the reporting period.

**Statement of Changes in Equity exhibit**

A statement included within the financials of a Canadian insurance company Illustrating the change in equity across the various classes of equity (e.g., share capital, retained earnings, available for sale financial assets) resulting from various transactions or events such as issue of share capital, total comprehensive income for the year, dividends, etc.

**Statement of retained earnings**

A statement included within the financials of a Canadian insurance company that provides the calculation of the retained earnings for the insurance company at the end of the reporting period.

**Statutory Accounting Principles (SAP)**

The accounting framework that all U.S. insurance companies are required to report under for state regulatory purposes: "accounting principles or practices prescribed or permitted by an insurer's domiciliary state"[231]

**Structured settlements**

A situation where an insurance company settles a claim by purchasing an annuity on behalf of a claimant.

**Surplus (policyholders' surplus)**

The difference between assets and liabilities is generally referred to as net worth, and, in the specific case of an insurance company under statutory accounting, it is referred to as surplus.

**Surplus aid**

An amount of enhancement to surplus in the current period as a result of ceding commission that has been taken into income on its ceded unearned premium.

**Surplus ratio**

A ratio of mean policyholders' surplus to the sum of mean net loss and loss adjustment reserves, mean net unearned premium reserves and current year net earned premiums, in total for all lines combined.

**Swap**

"An agreement to exchange or net payments at one or more times based on the actual or expected price, level, performance or value of one or more Underlying Interests or upon the probability occurrence of a specified credit or other event."[232]

**Tabular reserves**

Indemnity reserves that are calculated using discounts determined with reference to actuarial tables that incorporate interest and contingencies such as mortality, remarriage, inflation or recovery from disability applied to a reasonably determinable payment stream. This definition does not include medical loss reserves or any LAE reserves.

**Tail coverage**

[231] NAIC, *Accounting Practices and Procedures Manual*, Volume I, March 2019, page P-2.
[232] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 373.

Coverage issued as an endorsement to a claims-made policy that covers claims incurred after the retroactive date but reported to the insurer subsequent to the claims-made policy expiration date.

**Tax-basis earned premium**

Earned premium adjusted for a revenue offset.

**Tax-basis incurred losses and expenses**

Statutory calendar-year incurred paid losses plus the change in discounted loss reserves.

**Total comprehensive income**

Net income as reported by Canadian insurance companies on the Statement of Income plus other comprehensive income.

**Treaty reinsurance**

A reinsurance contract that applies to all or a portion of an insurance company's policies written during the term of the reinsurance agreement, typically a calendar year.

**Unallocated loss adjustment expenses (ULAE)**

Expenses associated with the handling of claims that are not generally assigned to a particular claim, such as salaries for adjustors and utility costs.

**Underwriting income**

Earned premium minus loss and LAE incurred and other underwriting expenses incurred.

**Unearned commissions**

Ceding commissions from reinsurance that are not yet earned by the insurance company.

**Unearned premiums**

The premium that corresponds to the time period remaining on an insurance policy prior to expiration.

**Unpaid loss (or loss reserve)**

Amount of case outstanding plus incurred but not reported reserves. It represents the remaining amount expected to be paid on claims incurred by the insurance company.

**Value at risk**

"Largest loss likely to be suffered on a portfolio position over a holding period (usually 1 to 10 days) with a given probability (confidence level). VAR is a measure of market risk, and is equal to one standard deviation of the distribution of possible returns on a portfolio of positions. "[233]

**Warrant**

"An agreement that gives the holder the right to purchase an underlying financial instrument at a given price and time or at a series of prices and times according to a schedule or warrant agreement."[234]

**Written premium risk**

A risk that future business written by the company will be unprofitable.

**Yield curve**

"Graph used typically to show yields for different bond maturities and used for determining the best value in bonds and as an economic indicator. Positive (upward sloping) curve indicates an expanding economy whereas a flat or negative (downward sloping) curve indicates a slowing or contracting economy."[235]

[233] BusinessDictionary.com, *Definitions,* http://www.businessdictionary.com/definition/value-at-risk-VAR.html, 2019.
[234] *2018 NAIC Annual Statement Instructions Property/Casualty*, page 373.
[235] BusinessDictionary.com, *Definitions,* http://www.businessdictionary.com/definition/yield-curve.html, 2019.

# APPENDICES

# APPENDIX I. FICTITIOUS INSURANCE COMPANY

## EXCERPTS FROM THE 2018 ANNUAL STATEMENT FOR FICTITIOUS INSURANCE COMPANY

## EXCERPTS FROM THE 2018 INSURANCE EXPENSE EXHIBIT FOR FICTITIOUS INSURANCE COMPANY

## 2018 STATEMENT OF ACTUARIAL OPINION FOR FICTITIOUS INSURANCE COMPANY

**STATEMENT OF ACTUARIAL OPINION**

**Fictitious Insurance Company**

IDENTIFICATION

I, William H. Smith, am a Fellow of the Casualty Actuarial Society, member of the American Academy of Actuaries, and am associated with the firm of WS Actuarial Consulting. I meet the qualification standards of the American Academy of Actuaries for Statements of Actuarial Opinion for the Property and Casualty ("P&C") Annual Statement.

I was appointed by the Board of Directors of Fictitious Insurance Company ("the Company") on September 7, 2018, to provide this opinion for purposes of satisfying the requirements of the NAIC *Annual Statement Instructions Property/Casualty*. The intended users of this opinion are Company management, its Board of Directors and state insurance department regulators.

SCOPE

I have reviewed the December 31, 2018, loss and loss adjustment expense reserves recorded under U.S. Statutory Accounting Principles, listed in Exhibit A and included in the 2018 Statutory Annual Statement of the Company as filed with the respective state insurance departments. Those loss and loss adjustment expense reserves are the responsibility of the Company's management; my responsibility is to express an opinion on those loss and loss adjustment expense reserves based on my review.

My review of the Company's reserves included the use of such actuarial assumptions and methods and such tests of the actuarial calculations as I considered necessary in the circumstances and was conducted in accordance with standards and principles established by the Actuarial Standards Board. My review considered information provided to me through January 28, 2019.

The reserves listed in Exhibit A, where applicable, include provisions for disclosure items (disclosures 8 through 13) in Exhibit B.

In my review, I have relied on data and other relevant information, prepared by John J. Hoffman, Vice President and Controller of the Company. I evaluated that data for reasonableness and consistency. I also reconciled that data to Schedule P, Part 1 of the Company's 2018 Annual Statement.

I have not reviewed the Company's unearned premium reserves, nor have I performed any analysis to determine whether a premium deficiency reserve is needed to supplement the unearned premium reserves reported by the Company.

I have not reviewed any of the Company's assets, nor have I formed any opinion as to their validity or value; the following opinion is based on the assumption that the Company's December 31, 2018,

statutory-basis reserves identified herein are funded by valid assets that have suitably scheduled maturities and/or adequate liquidity to meet cash flow requirements.

OPINION

In my opinion, the amounts carried in Exhibit A on account of the items identified:

- Make a reasonable provision for all unpaid losses and loss adjustment expenses, gross and net as to reinsurance ceded, under the terms of the Company's contracts and agreements.
- Are computed in accordance with accepted standards and principles.
- Meet the requirements of the insurance laws of Florida.

RELEVANT COMMENTS

*Materiality standard*

In order to establish my materiality standard, for purposes of addressing the risk of material adverse deviation of the Company's reserves for unpaid losses and loss adjustment expenses, I have considered the following amounts:

| | | |
|---|---|---|
| 1. | 10% of the Company's net loss + loss adjustment expense reserves (10% of Exhibit A, Item 1. + Item 2.) at December 31, 2018 | $5,155,700 |
| 2. | 20% of the Company's surplus at December 31, 2018 | $6,204,800 |
| 3. | The difference between the Company's surplus at December 31, 2018, and the company action level based on the NAIC's Risk-Based Capital formula | $19,848,000 |

My materiality standard, for purposes of preparing the analysis in support of this Statement of Actuarial Opinion, was established at $5,155,700, which is the smallest of the foregoing amounts.

*Risk of material adverse deviation*

I have identified the major risk factors for this company as: mass tort claims; construction defect claims; so-called "Chinese drywall" claims; cumulative injury losses; claims from large deductible workers' compensation policies; and claims related to catastrophic weather events.

In my analysis I have considered these risk factors and the implications of uncertainty in estimates of unpaid losses and loss adjustment expenses in determining my range of reasonable estimates. I also observed that the difference between the Company's carried reserves for losses and loss adjustment

expenses and the higher end of my range of reasonable unpaid claim estimates is greater than my materiality standard.

In light of the materiality considerations within this analysis, and after considering the potential risks and uncertainties that could bear on the Company's reserve development, I concluded that there are significant risks and uncertainties that could result in material adverse deviation of the Company's carried reserves for unpaid losses and loss adjustment expenses as of December 31, 2018.

These risk factors are described in more detail in the following paragraphs and in the report supporting this opinion.

*Mass Torts*

The Company has exposure to mass tort claims such as those involving asbestos and environmental impairment liability. The Company's management has indicated that case-basis loss and allocated loss adjustment expense reserves for such claims are established as claims are reported. Additional reserves for such claims are established by the Company's management to include the potential for future development of those claims and the reporting of latent claims. Estimation of ultimate liabilities for those types of claims is unusually difficult due to such outstanding issues as whether coverage exists, definition of an occurrence, determination of ultimate damages, and allocation of such damages to financially responsible parties. The Company's net reserves for these mass tort claims totaling $3,739,000, which are included in the amounts listed in Exhibit A, are subject to greater inherent uncertainty than are estimates of the remainder of the Company's loss and loss adjustment expense liabilities.

*Other losses and/or risk factors subject to greater inherent uncertainty*

Additionally, at December 31, 2018, the Company has characterized construction defect claims; so-called "Chinese drywall" claims; cumulative injury losses; claims from large deductible workers' compensation policies; and claims related to catastrophic weather events, including wildfires tornadoes and hurricanes, as types of losses subject to greater inherent uncertainty than are estimates for the remainder of the Company's loss and loss adjustment expense liabilities due to pending legal interpretation, coverage disputes, length of the expected settlement pattern and high excess attachment levels. The absence of other types of losses and risk factors from this paragraph does not imply that additional factors will not be identified in the future as having contributed to significant uncertainty in the Company's estimates of unpaid losses and loss adjustment expenses.

*Anticipated salvage and subrogation*

The Company's management has informed me that the reserves listed in Exhibit A provide for anticipated salvage and subrogation.

*Discounting*

Except for tabular discount for workers' compensation and other liability, the Company's management has informed me that it does not discount its reserves for unpaid losses and loss adjustment expenses.

*Pools and associations*

The company does not participate in any voluntary and involuntary underwriting pools or associations.

*Retroactive or financial reinsurance*

I have been informed by the Company's management that it is not aware of any reinsurance contract that either has been or should have been accounted for as retroactive reinsurance or financial reinsurance.

*Uncollectible reinsurance*

I have been informed by the Company's management that it is not aware of any significant uncollectible reinsurance. In my review, I have requested information from management on uncollectible reinsurance, reviewed the latest available financial ratings of reinsurers by a recognized rating service and reviewed Schedule F for indications of regulatory actions or reinsurance recoverables on paid losses over 90 days past due. The majority of the Company's ceded loss reserves are with reinsurance companies rated A or better by A.M. Best Company. Past uncollectability levels and current amounts in dispute have been reviewed and found to be immaterial relative to surplus. Therefore, reinsurance collectability does not appear to be an issue. I express no opinion on the financial condition of the Company's reinsurers.

*IRIS Ratios*

I have reviewed the Company's calculations of the National Association of Insurance Commissioners' Insurance Regulatory Information System (IRIS) tests that relate to the Company's December 31, 2018, loss and loss adjustment expense reserves (Test 11, One-Year Reserve Development to Surplus; Test 12, Two-Year Reserve Development to Surplus; and Test 13, Estimated Current Reserve Deficiency to Surplus). No exceptional values were noted with respect to the Company's December 31, 2018, loss and loss adjustment expense reserve tests.

*Extended reporting endorsements*

According to management, the Company has no exposure to medical professional liability extended reporting endorsements, such as those relating to death, disability or retirement.

*P&C Long Duration Contracts*

Excluding financial guaranty contracts, mortgage guaranty policies and surety contracts, the Company's management has informed me that the Company does not write policies with coverage periods of 13 months or greater that are non-cancelable and not subject to premium increase.

**Accident & Health ("A&H") Long Duration Contracts**

The Company's management has informed me that the Company does not write A&H policies with contract terms of thirteen months and for which contract reserves are required.

* * *

An actuarial report supporting this actuarial opinion is to be provided to the Company to be retained for a period of seven years at its administrative offices and to be available for regulatory examination.

**(Signature of William H. Smith)**

_____

William H. Smith, FCAS, MAAA
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+1 305 555-5555
william.smith@wsactuarialconsulting.com

February 24, 2019

## Exhibit A: SCOPE

| Loss and Loss Adjustment Expense Reserves: | | Amount |
|---|---|---|
| 1. | Reserve for Unpaid Losses (Liabilities, Surplus and Other Funds page, Col 1, Line 1) | $41,894,000 |
| 2. | Reserve for Unpaid Loss Adjustment Expenses (Liabilities, Surplus and Other Funds page, Col 1, Line 3) | $9,663,000 |
| 3. | Reserve for Unpaid Losses – Direct and Assumed (Should equal Schedule P, Part 1, Summary, Totals from Cols. 13 and 15, Line 12 * 1000) | $51,275,000 |
| 4. | Reserve for Unpaid Loss Adjustment Expenses – Direct and Assumed (Should equal Schedule P, Part 1, Summary, Totals from Cols. 17, 19 and 21, Line 12 * 1000) | $10,424,000 |
| 5. | The Page 3 write-in item reserve, "Retroactive Reinsurance Reserve Assumed" | $0 |
| 6. | Other Loss Reserve items on which the Appointed Actuary is expressing an Opinion (list separately) | $0 |

| Premium Reserves: | | |
|---|---|---|
| 7. | Reserve for Direct and Assumed Unearned Premiums for P&C Long Duration Contracts | $0 |
| 8. | Reserve for Net Unearned Premiums for P&C Long Duration Contracts | $0 |
| 9. | Other Premium Reserve items on which the Appointed Actuary is expressing an Opinion (list separately) | $0 |

## Exhibit B: DISCLOSURES

| | | | Last | First | Mid |
|---|---|---|---|---|---|
| 1. | Name of the Appointed Actuary | | Smith | William | H |
| 2. | The Appointed Actuary's Relationship to the Company. Enter E or C based upon the following:<br>E if an Employee of the Company or Group<br>C if a Consultant | | | C | |
| 3. | The Appointed Actuary has the following designation (indicated by the letter code):<br>F if a Fellow of the Casualty Actuarial Society (FCAS)<br>A if an Associate of the Casualty Actuarial Society (ACAS)<br>M if not a member of the Casualty Actuarial Society, but a Member of the American Academy of Actuaries (MAAA) approved by the Casualty Practice Council, as documented with the attached approval letter.<br>O for Other | | | F | |
| 4. | Type of Opinion, as identified in the OPINION paragraph. Enter R, I, E, Q, or N based upon the following:<br>R if Reasonable<br>I if Inadequate or Deficient Provision<br>E if Excessive or Redundant Provision<br>Q if Qualified. Use Q when part of the OPINION is Qualified<br>N if No Opinion | | | R | |
| 5. | Materiality Standard expressed in U.S. dollars (Used to Answer Question #6) | $5,155,700 | | | |
| 6. | Are there significant risks that could result in Material Adverse Deviation? | | Yes [X ] | No [ ] | Not Applicable [ ] |
| 7. | Statutory Surplus (Liabilities, Col 1, Line 37) | $31,024,000 | | | |
| 8. | Anticipated net salvage and subrogation included as a reduction to loss reserves as reported in Schedule P (should equal Part 1 Summary, Col 23, Line 12 * 1000) | $1,363,000 | | | |
| 9. | Discount included as a reduction to loss reserves and loss expense reserves as reported in Schedule P | | | | |
| | 9.1 Nontabular Discount [Notes, Line 32B23, (Amounts 1, 2, 3 & 4)], Electronic Filing Cols 1, 2, 3 & 4 | $0 | | | |
| | 9.2 Tabular Discount [Notes, Line 32A23 (Amounts 1 & 2)], Electronic Filing Col 1 & 2. | $1,365,000 | | | |

| | | |
|---|---|---|
| 10. | The net reserves for losses and expenses for the Company's share of voluntary and involuntary underwriting pools' and associations' unpaid losses and expenses that are included in reserves shown on the Liabilities, Surplus and Other Funds page, Losses and Loss Adjustment Expenses lines. | $0 |
| 11. | The net reserves for losses and loss adjustment expenses that the Company carries for the following liabilities included on the Liabilities, Surplus and Other Funds page, Losses and Loss Adjustment Expenses lines.* | |
| | 11.1 Asbestos, as disclosed in the Notes to Financial Statements (Notes, Line 33A03D, ending net asbestos reserves for current year), Electronic Filing Col 6 | $3,280,000 |
| | 11.2 Environmental, as disclosed in the Notes to Financial Statements (Notes, Line 33D03D, ending net environmental reserves for current year), Electronic Filing Col 6 | $459,000 |
| 12. | The total claims made extended loss and expense reserve (Greater than or equal to Schedule P Interrogatories). | |
| | 12.1 Amount reported as loss reserves | $0 |
| | 12.2 Amount reported as unearned premium reserves | $0 |
| 13. | The net reserves for the A&H Long Duration Contracts that the Company carries on the following lines on the Liabilities, Surplus and Other Funds page: | |
| | 13.1 Losses | $0 |
| | 13.2 Loss Adjustment Expenses | $0 |
| | 13.3 Unearned Premium | $0 |
| | 13.4 Write-In (list separately, adding additional lines as needed, and identify (e.g., "Premium Deficiency Reserves", "Contract Reserves other than Premium Deficiency Reserves" or "AG 51 Reserves")) | $0 |
| 14. | Other items on which the Appointed Actuary is providing Relevant Comment (list separately) | $0 |

* The reserves disclosed in item 11 above, should exclude amounts relating to contracts specifically written to cover asbestos and environmental exposures. Contracts specifically written to cover these exposures include Environmental Impairment Liability (post 1986), Asbestos Abatement, Pollution Legal Liability, Contractor's Pollution Liability, Consultant's Environmental Liability, and Pollution and Remediation Legal Liability.

## 2018 ACTUARIAL OPINION SUMMARY FOR FICTITIOUS INSURANCE COMPANY

### ACTUARIAL OPINION SUMMARY

**Fictitious Insurance Company**

**December 31, 2018**

This Actuarial Opinion Summary has been prepared in conjunction with my role as Appointed Actuary for Fictitious Insurance Company ("the Company"), and in accordance with the NAIC's Annual Statement Supplemental Filing Instructions. The information provided in this Actuarial Opinion Summary will be included in the actuarial report in support of my Statement of Actuarial Opinion, dated February 24, 2019, on the Company's statutory-basis loss and loss adjustment expense reserves at December 31, 2018. That actuarial report is to be provided to the Company to be retained for a period of seven years at its administrative offices and to be available for regulatory examination.

| | | Net Reserves (USD in 000s) | | | Gross Reserves (USD in 000s) | | |
|---|---|---|---|---|---|---|---|
| | | Low | Point | High | Low | Point | High |
| A. | Actuary's range of reserve estimates | 43,000 | | 57,000 | 52,000 | | 68,000 |
| B. | Actuary's point estimate | | 50,000 | | | 60,000 | |
| C. | Company carried reserves | | 51,557 | | | 61,699 | |
| D. | Difference between Company carried and Actuary's estimate (C. - A. and C. – B., if applicable) | 8,557 | 1,557 | (5,443) | 9,699 | 1,699 | (6,301) |

E. The Company has not had one-year adverse development in excess of 5% of surplus in at least three of the last five calendar years, as measured by Schedule P, Part 2, Summary, and disclosed in the Five-Year Historical Data, on line 74, of the Company's December 31, 2018 statutory-basis Annual Statement.

* * *

This Actuarial Opinion Summary was prepared solely for the Company for the purpose of filing with regulatory agencies and is not intended for any other purpose. Furthermore, it is my understanding that, consistent with the Annual Statement Supplemental Filing Instructions, the information provided in this Actuarial Opinion Summary will be held confidential by those regulatory agencies and will not be made available for public inspection.

**(Signature of William H. Smith)**

_____

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March 1, 2019

## RESULTS OF IRIS RATIO TESTS FOR FICTITIOUS INSURANCE COMPANY

OVERVIEW

Within this section of the Appendix, we will walk through the calculation and purpose of the 13 IRIS Ratios, provide possible explanations for unusual values, and show the results of the IRIS Ratio calculations for Fictitious Insurance Company using the 2018 Annual Statement.

IRIS Ratios are grouped into four categories:

- Overall ratios
- Profitability ratios
- Liquidity ratios
- Reserve ratios

We will present the material separately by category.

It is important to note that the calculations provided herein are based on the 2017 edition of the National Association of Insurance Commissioners' (NAIC) *Insurance Regulatory Information System (IRIS) Ratios Manual*. Further, the ranges of "unusual values" are as provided in the 2017 IRIS manual. The NAIC re-evaluates the reasonableness of the ranges periodically, in light of the current environment. For example, years ago the range of "usual" values for IRIS Ratio 6, *Investment Yield*, was between 5% and 10%. Compare that to the range in 2017 of 3% to 6.5%, which reflects the current economic environment. The current version of the IRIS manual needs to be followed when analyzing data.

OVERALL RATIOS

The overall ratios focus on the insurance company's leverage, in terms of premium volume relative to surplus. There are four overall ratios:

IRIS Ratio 1: Gross premiums written to policyholders' surplus
IRIS Ratio 2: Net premiums written to policyholders' surplus
IRIS Ratio 3: Change in net premiums written
IRIS Ratio 4: Surplus aid to policyholders' surplus

**IRIS Ratios 1 and 2** provide written premium-to-surplus ratios on a gross and net of reinsurance basis, respectively. The denominator is the same in each of these ratios, with the numerator differing by the amount of ceded reinsurance premium written. The source of this data can be readily found in an insurance company's Annual Statement, from either Part 1B of the Underwriting and Investment Exhibit (U&IE) *and* the balance sheet (page 3), or Five-Year Historical Data.

The purpose of IRIS Ratios 1 and 2 is to identify companies that may be taking on more business and more risk than they can handle relative to their surplus. Unusual values are greater than or equal to 900% on a gross basis and 300% on a net basis. The 300% ratio on a net basis corresponds to the age-old

generally accepted benchmark that insurers remain within the 3-to-1 range in terms of writings relative to surplus. This ratio is higher on a gross basis in consideration of reinsurance.

The following are examples of considerations that should be made when reviewing the results of these ratios:

- The difference between the gross and net IRIS Ratio results:
    - Wide disparity could signal heavy reliance on reinsurance or involvement in fronting arrangements. Further investigation on the quality, rating and collectability of the reinsurance should be made, as well as the level of collateral held, if any. This can be accomplished through a review of the note titled, "Reinsurance" (number 23 within the Notes to Financial Statement of the 2018 Annual Statement), Schedule F, and research on the financial ratings of the company's reinsurers listed in Schedule F by a recognized rating service, such as A.M. Best.
    - This does not mean that a narrow difference between the gross and net IRIS Ratio results should not be investigated, as it could signal inadequate levels of reinsurance protection, in particular if the company is exposed to catastrophe risk. Part 2 of the General Interrogatories provides information on a company's protection against excessive or catastrophic loss, although further inquiry would have to be made of the company for specific details.
- The amount of the gross premiums that stem from assumed business versus business directly written by the company:
    - Companies tend to have less control over business assumed from third parties. Those companies having a large portion of assumed business and IRIS Ratio 1 results nearing the unusual value benchmark should be subject to further investigation. This would include an understanding of the type of business assumed, attachment points, layers and limits of coverage, as well as the underwriting and price monitoring controls in place on the assumed book.
- The results relative to lines of business written:
    - Lower ratio results are preferred for companies writing long-tailed lines of business due to the uncertainty inherent in the ultimate payout of associated claims.

As displayed below, IRIS Ratios 1 and 2 can be calculated for Fictitious using data from the Five-Year Historical Data exhibit.

| **Data from Fictitious Insurance Company 2018 Five-Year Historical Data (USD)** | | | | | |
|---|---|---|---|---|---|
| | **2018** | **2017** | **2016** | **2015** | **2014** |

| | | | | | |
|---|---|---|---|---|---|
| 6. Gross premiums written (GPW) | 28,634,000 | 28,085,000 | 29,519,000 | 31,238,000 | 31,670,000 |
| 12. Net premiums written (NPW) | 26,752,000 | 25,936,000 | 25,521,000 | 25,583,000 | 25,363,000 |
| 26. Surplus as regards policyholders (PHS) | 31,024,000 | 31,608,000 | 35,793,000 | 32,572,000 | 34,567,000 |
| **Results of IRIS Ratios 1 and 2** | | | | | |
| IRIS Ratio 1 (= Line 6 / Line 26) | 92% | 89% | 82% | 96% | 92% |
| IRIS Ratio 2 (= Line 12 / Line 26) | 86% | 82% | 71% | 79% | 73% |

As displayed in the above table, the results of IRIS Ratio 1 for Fictitious, ranging from 82% to 96% over the period 2014 to 2018, were well within the benchmark imposed for unusual values (900%). Similarly, the results of IRIS Ratio 2, ranging from 71% to 86% over same period, were well within the 300% benchmark on a net basis.

**IRIS Ratio 3** provides the change in net written premiums, current year over prior year, as a percentage of prior year net written premium. The source of this data can be readily found in an insurance company's Annual Statement, from either Part 1B of the current year and prior year U&IEs, or Five-Year Historical Data.

The purpose of IRIS Ratio 3 is to identify companies that are growing or declining rapidly so that further investigation can be made as to the cause. Unusual values are outside of the -33% to +33% range.

The following are examples of considerations that should be made when reviewing the results of IRIS Ratio 3:

- Consistent or large increases in results:
    - Growth brings uncertainty in the types of risks written and the frequency and ultimate cost of claims. In certain markets, it is difficult to expand without conceding on pricing and underwriting standards. Further investigation as to the source of the company's expansion and whether the company has been able to maintain adequate pricing and terms and conditions is warranted. In addition, a review of the results of other IRIS Ratios can serve to mitigate or augment the uncertainty. For example, a mitigating factor would be a low result for IRIS Ratios 1 and 2.
- Consistent or large decreases in results:
    - A decrease in writings also requires attention. A sharp reduction in writings may be a sign of financial stress.
- Unstable results year over year:

- This may be a sign that the company does not have good controls on its underwriting or a solid business plan and therefore raises uncertainty with respect to the viability of the company in the long-term.

We can also calculate IRIS Ratio 3 from Fictitious' Five-Year Historical Data exhibit.

| **Data from Fictitious Insurance Company 2018 Five-Year Historical Data (USD)** | | | | | |
|---|---|---|---|---|---|
| | **2018** | **2017** | **2016** | **2015** | **2014** |
| 12. Net premiums written (NPW) | 26,752,000 | 25,936,000 | 25,521,000 | 25,583,000 | 25,363,000 |
| **Results of IRIS Ratio 3** | | | | | |
| IRIS Ratio 3 (= Line 12 current less prior year) /Line 12 prior year) | 3% | 2% | 0% | 1% | |

As displayed in the above table, the results of IRIS Ratio 3 for Fictitious, ranging from 0% to 3% over the period 2014 through 2018, were well within the benchmark imposed for unusual values (outside the range -33% to +33%).

**IRIS Ratio 4** provides the ratio of surplus aid to policyholder surplus. It is meant to identify companies that rely heavily on reinsurance as a means to enhance surplus. Insurance companies typically receive a ceding commission from their reinsurers for placing business with those reinsurers. Under statutory accounting, the treatment of ceding commissions is similar to the way that an insurance company treats policy acquisition costs, the "signs" are just different. While acquisition expenses are a direct charge to income and surplus as they are incurred, ceding commissions are recognized as a credit to income and surplus when they are incurred. Surplus aid represents the amount of enhancement to surplus in the current period as a result of ceding commission that has been taken into income on its ceded unearned premium. Formulaically,

Surplus aid =

Estimated reinsurance commission rate
* Unearned premium on reinsurance ceded to non-affiliates

where,

Estimated reinsurance commission rate =

Ceding commissions from reinsurance, including contingent commissions
÷ Total written premiums ceded to reinsurers (affiliates and non-affiliates)

Ceding commissions from reinsurance for the current year are found in Part 3, Expenses of the U&IE of the Annual Statement, column 2 (other underwriting expenses), line 2.3 (reinsurance ceded, excluding contingent) plus line 2.6 (contingent — reinsurance ceded).

Total written premiums ceded to reinsurers is found in Part 1B, Premiums Written of the U&IE of the Annual Statement, column 4 (reinsurance ceded to affiliates) plus column 5 (reinsurance ceded to non-affiliates) totals.

Unearned premium on reinsurance ceded to non-affiliates is found in Schedule F, Part 3, reinsurance ceded of the Annual Statement, column 13 totals for the following three categories of unaffiliated reinsurers:

1. Authorized, unauthorized and certified other U.S. unaffiliated insurers
2. Authorized, unauthorized and certified mandatory and voluntary pools
3. Authorized, unauthorized and certified other non-U.S. insurers

IRIS Ratio 4 is the ratio of surplus aid, as calculated above, to policyholders' surplus.

Unusual values are greater than or equal to 15%, and may be a sign that policyholders' surplus is inadequate. Therefore, when IRIS Ratio 4 produces values greater than 15%, certain other IRIS Ratio tests dependent upon policyholders' surplus are recalculated to remove surplus aid. These are:

IRIS Ratio 1: Gross premiums written to policyholders' surplus
IRIS Ratio 2: Net premiums written to policyholders' surplus
IRIS Ratio 7: Gross change in policyholders' surplus
IRIS Ratio 10: Gross agents' balances (in collection) to policyholders' surplus
IRIS Ratio 13: Estimated current reserve deficiency to policyholders' surplus

Further, when IRIS Ratio 4 produced unusual values, the company's reinsurance treaties should be evaluated to assess the impact that cancellation could have on solvency.

The following provides the calculation of IRIS Ratio 4 for Fictitious.

## Appendix I. Fictitious Insurance Company

| Data from Fictitious Insurance Company 2018 Annual Statement (USD) | | | |
|---|---|---|---|
| | | **2018** | **Source** |
| **(1)** | Surplus Aid | 403,172 | = (2) * (9) * 1000 |
| **(2)** | Estimated reinsurance commission rate | 44% | = (3) / (6) |
| **(3)** | Total ceding commissions from reinsurance | 825,000 | = (4) + (5) |
| **(4)** | Reinsurance ceded, excluding contingent | 816,000 | Underwriting & Investment Exhibit, Part 3, Column 2, Line 2, 3 |
| **(5)** | Ceding Commission from reinsurance | 9,000 | Underwriting & Investment Exhibit, Part 3, Column 2, Line 2, 6 |
| **(6)** | Total written premiums ceded to reinsurers | 1,882,000 | = (7) + (8); = Five Year Historical Data GPW minus NPW |
| **(7)** | Reinsurance ceded to affiliates | 0 | Underwriting & Investment Exhibit, Part 1B, Column 4, Total |
| **(8)** | Reinsurance ceded to non-affiliates | 1,882,000 | Underwriting & Investment Exhibit, Part 1B, Column 5, Total |
| **(9)** | Unearned premium on reinsurance ceded to non-affiliates | 920 | = Sum of (10) through (21) |
| **(10)** | Authorized Other U.S. Unaffiliated Insurers | 532 | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(11)** | Authorized Mandatory Pools | | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(12)** | Authorized Voluntary Pools | 50 | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(13)** | Authorized Other Non-U.S. Insurers | 201 | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(14)** | Unauthorized Other U.S. Unaffiliated Insurers | 29 | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(15)** | Unauthorized Mandatory Pools | | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(16)** | Unauthorized Voluntary Pools | | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(17)** | Unauthorized Other Non-U.S. Insurers | 16 | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(18)** | Certified Other U.S. Unaffiliated Insurers | | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(19)** | Certified Mandatory Pools | | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(20)** | Certified Voluntary Pools | | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(21)** | Certified Other Non-U.S. Insurers | 92 | Schedule F, Part 3, Column 13, Total (000 omitted) |
| **(22)** | Surplus as regards policyholders (PHS) | 31,024,000 | Page 3, Line 37, Column 1 |
| **Results of IRIS Ratio 4** | | | |
| IRIS Ratio 4 | | 1.30% | = (1) / (22) |

As displayed in the above table, the result of IRIS Ratio 4 of 1.30% for Fictitious was well within the benchmark imposed for unusual values (greater than or equal to 15%).

PROFITABILITY RATIOS

The profitability ratios focus on the insurance company's profitability from an operations, investment and surplus perspective. There are four profitability ratios:

IRIS Ratio 5: Two-year overall operating ratio
IRIS Ratio 6: Investment yield
IRIS Ratio 7: Gross change in policyholders' surplus
IRIS Ratio 8: Change in adjusted policyholders' surplus

**IRIS Ratio 5** essentially provides a company's combined ratio over a two-year period, offset for investment income earned over that period. In IRIS Ratio 5, the combined ratio is calculated as loss and loss adjustment expense (LAE) incurred plus policyholder dividends incurred, divided by earned premium, plus other underwriting expenses less other income, divided by written premium. The investment income ratio is calculated as the ratio of investment income earned divided by earned premium.

Two-year operating ratio =

Two-year combined ratio – Two-year investment income ratio

where,

Combined ratio =

$$\frac{\text{Net loss and LAE + Dividends to policyholders incurred}}{\text{Net earned premium}} + \frac{\text{Other underwriting expenses – Other income incurred}}{\text{Net written premium}}$$

Investment income ratio =

$$\frac{\text{Investment income earned}}{\text{Net earned premium}}$$

The source of this data can be readily found in an insurance company's Annual Statement, from the Statement of Income and Part 1B of the U&IE.

The purpose of IRIS Ratio 5 is to identify companies that are operating unprofitably. A two-year period is used in the calculation to smooth unusual fluctuations due to a "bad" loss or investment year. Unusual values are greater than or equal to 100%, meaning that the company is operating at an underwriting loss, even after consideration of investment income.

When reviewing the result of this ratio, consideration should be made for the cause by looking at each of the components of the calculation. During the financial crisis, companies experienced a significant decline in investment income and therefore did not achieve as much of a benefit in the offset afforded in the calculation. Further, adverse development on prior accident years will have an impact on the combined ratio, but such development may not be reflective of profitability on the company's current operations or current reserving.

IRIS Ratio 5 is calculated for Fictitious in the following table.

## Appendix I. Fictitious Insurance Company

**Data from Fictitious Insurance Company 2018 Annual Statement (USD)**

| | | 2018 (Current Year) | 2017 (Prior Year) | Sum over 2-Year | Source |
|---|---|---|---|---|---|
| **(1)** | Combined Ratio | 108% | 94% | 101% | = (2) + (8) |
| **(2)** | Loss Ratio | 76% | 62% | 69% | = (3) / (7) |
| **(3)** | Loss & LAE plus Dividends to Policyholders incurred | 20,208,000 | 15,838,000 | 36,046,000 | = (4) + (5) + (6) |
| **(4)** | Losses incurred | 16,907,000 | 12,798,000 | 29,705,000 | Statement of Income, Line 2, Columns 1 and 2, respectively |
| **(5)** | Loss Adjustment Expenses (LAE) incurred | 3,255,000 | 3,008,000 | 6,263,000 | Statement of Income, Line 3, Columns 1 and 2, respectively |
| **(6)** | Dividends to policyholders | 46,000 | 32,000 | 78,000 | Statement of Income, Line 17, Columns 1 and 2, respectively |
| **(7)** | Net premiums earned | 26,512,000 | 25,535,000 | 52,047,000 | Statement of Income, Line 1, Columns 1 and 2, respectively |
| **(8)** | Expense Ratio | 32% | 32% | 32% | = (9) / (13) |
| **(9)** | Expenses Incurred | 8,450,000 | 8,194,000 | 16,664,000 | = (10) + (11) - (12) |
| **(10)** | Other underwriting expenses | 8,483,000 | 8,240,000 | 16,723,000 | Statement of Income, Line 4, Columns 1 and 2, respectively |
| **(11)** | Aggregate write-ins for underwriting deductions | – | 1,000 | 1,000 | Statement of Income, Line 5, Columns 1 and 2, respectively |
| **(12)** | Total other income | 33,000 | 47,000 | 80,000 | Statement of Income, Line 15, Columns 1 and 2, respectively |
| **(13)** | Net premiums written | 26,752,000 | 25,936,000 | 52,688,000 | Underwriting & Investment Exhibit, Part 1B, Column 6, Total* |
| **(14)** | Investment Income Ratio | 16% | 19% | 18% | = (15) / (16) |
| **(15)** | Investment income earned | 4,290,000 | 4,860,000 | 9,150,000 | Statement of Income, Line 9, Columns 1 and 2, respectively |
| **(16)** | Net premiums earned | 26,512,000 | 25,535,000 | 52,047,000 | Statement of Income, Line 1, Columns 1 and 2, respectively |

**Results of IRIS Ratio 5**

| | | |
|---|---|---|
| IRIS Ratio 5 | 84% | = (1) - (14) for two-year period |

******Also provided in Five-Year Historical Data*

As displayed above, the result of IRIS Ratio 5 for Fictitious of 84% was well within the 100% benchmark imposed for unusual values.

**IRIS Ratio 6** provides the yield in the company's investment portfolio over the past year. IRIS Ratio 6 is calculated as net investment income earned during the year divided by the average of cash plus invested assets over the current and prior year. The source of this data can be readily found in an insurance company's Annual Statement, from the balance sheet and Statement of Income.

The purpose of IRIS Ratio 6 is to identify companies earning unusually low or high yields, potentially indicating a risky, inefficient or expensive investment strategy. Unusual values are outside of a 3.0% to

6.5% range. That is, it is expected that companies will achieve a 3.0% to 6.5% yield on their invested assets during the year.

When reviewing the result of this ratio, consideration should be made for the cause by looking at each of the components of the calculation, and further investigation into the types of investment should be made.

The following provides the calculation of IRIS Ratio 6 for Fictitious.

| Data from Fictitious Insurance Company 2018 Annual Statement (USD) | | | | |
|---|---|---|---|---|
| | **2018 (Current Year)** | **2017 (Prior Year** | **Sum over 2-Year** | **Source** |
| **(1)** Net investment income earned | 4,290,000 | | | Statement of Income, Line 9, Column 1 |
| **(2)** Cash and invested assets | 88,551,000 | 88,534,000 | 88,542,500 | = (3) + (4) - (5); Average over two-year |
| **(3)** Total cash and investment assets | 87,825,000 | 87,784,000 | | Page 2, Line 12, Columns 3 and 4, respectively |
| **(4)** Investment income due and accrued | 726,000 | 750,000 | | Page 2, Line 14, Columns 3 and 4, respectively |
| **(5)** Borrowed money | – | – | | Page 3, Line 8, Columns 1 and 2, respectively |
| **Results of IRIS Ratio 6** | | | | |
| IRIS Ratio 6 | | | 5.0% | = 2 * (1) current year /[ (2) for two-year period – (1) current year] |

As displayed in the above table, the result of IRIS Ratio 6 for Fictitious of 5.0% was right around the midpoint of the expected benchmark range of 3.0% to 6.5% for usual values. This means that the company earned a return on its invested assets within what would be considered the "norm" for companies in 2018.

**IRIS Ratio 7** is what the NAIC calls "the ultimate measure of improvement or deterioration in the insurer's financial condition during the year."[236] It provides the change in policyholder surplus, current year over prior year, as a percentage of prior year surplus, with the surplus figures coming directly from the company's balance sheet. We note that historical surplus figures are also provided in the Five-Year Historical Data of the company's Annual Statement.

Unusual values are outside of a -10% to +50% range. That is, a decrease in a company's surplus by 10% or more, or an increase by 50% or more, is considered a signal for the analyst to perform further inquiry and investigation. The NAIC recognizes that a 10% decrease is conservative; however, decreases in policyholder surplus are of course a greater concern than increases. Increases in surplus of 50% or more

[236] NAIC, *Insurance Regulatory Information System (IRIS) Ratios Manual*, 2017 edition, page 18.

are very unusual for a stable company absent an acquisition or redistribution of capital amongst affiliates and therefore would be a sign of financial instability. According to the NAIC, "a number of insolvent insurers report dramatic increases in policyholders' surplus prior to insolvency."[237]

Using the Five-Year Historical Data exhibit, we can calculate the result of IRIS Ratio 7 over the past four years.

| **Data from Fictitious Insurance Company 2018 Annual Statement (USD)** | | | | | |
|---|---|---|---|---|---|
| | **2018** | **2017** | **2016** | **2015** | **2014** |
| 26. Surplus as regards policyholders (PHS) | 31,024,000 | 31,608,000 | 35,793,000 | 32,572,000 | 34,567,000 |
| **Results of IRIS Ratios 7** | | | | | |
| IRIS Ratio 7 (= Line 26 current less prior year / Line 26 prior year) | -1.8% | -11.7% | 9.9% | -5.8% | |

As displayed in the above table, the result of IRIS Ratio 7 for Fictitious did breach the -10% mark for unusual values in 2017 at -12%.

**IRIS Ratio 8** is similar to IRIS Ratio 7, with the exception that current-year policyholders' surplus is adjusted to remove changes in surplus notes, capital paid-in or transferred, and surplus paid-in or transferred. Removal of these items provides a picture of the improvement or deterioration in financial results due to operations. The source of the data used in the calculation of IRIS Ratio 8 is the balance sheet and Statement of Income of the company's Annual Statement.

Unusual values are outside of a -10% to +25% range. That is, a decrease in a company's surplus resulting from operations by 10% or more, or an increase by 25% or more, is considered a signal for the analyst to perform further inquiry and investigation. The lower bound benchmark is the same as in Ratio 7; however, the upper bound of +25% is lower, reflecting the expectation that operations would not typically cause an increase in surplus by more than 25%.

The calculation of IRIS Ratio 8 is shown below for Fictitious.

[237] Ibid.

| Data from Fictitious Insurance Company 2018 Annual Statement (USD) | | | | |
|---|---|---|---|---|
| | | **2018 (Current Year)** | **2017 (Prior Year)** | **Source** |
| **(1)** | Adjusted policyholders' surplus | (584,000) | (4,546,000) | = (2) - (3) - (4) – (8) – (12) |
| **(2)** | Policyholders' surplus | 31,024,000 | 31,608,000 | Statement of Income, Line 39, Columns 1 and 2, respectively |
| **(3)** | Change in surplus notes | – | – | Statement of Income, Line 29, Columns 1 and 2, respectively |
| **(4)** | Capital paid-in or transferred | – | – | = (5) + (6) + (7) |
| **(5)** | Paid in | – | – | Statement of Income, Line 32.1, Columns 1 and 2, respectively |
| **(6)** | Transferred from surplus (Stock Dividend) | – | – | Statement of Income, Line 32.2, Columns 1 and 2, respectively |
| **(7)** | Transferred to surplus | – | – | Statement of Income, Line 32.3, Columns 1 and 2, respectively |
| **(8)** | Surplus paid-in or transferred | – | 361,000 | = (9) + (10) + (11) |
| **(9)** | Paid in | – | 361,000 | Statement of Income, Line 33.1, Columns 1 and 2, respectively |
| **(10)** | Transferred to capital (Stock Dividend) | – | – | Statement of Income, Line 33.2, Columns 1 and 2, respectively |
| **(11)** | Transferred from capital | – | – | Statement of Income, Line 33.3, Columns 1 and 2, respectively |
| **(12)** | Policyholders' surplus prior year | 31,608,000 | 35,793,000 | Statement of Income, Line 21, Columns 1 and 2, respectively |
| **Results of IRIS Ratio 8** | | | | |
| IRIS Ratio 8 | | -2% | -13% | = (1) / (12) |

As displayed in the above table, the result of IRIS Ratio 8 for Fictitious did breach the -10% mark for unusual values in 2017 at -13%. This is consistent with the finding from IRIS Ratio 7; however, it shows that the surplus enhancement during 2017 of $361,000 helped to cushion the impact of the change in surplus observed in IRIS Ratio 7.

This ratio is telling us that the unusual value in 2017 could be attributed to the company's operations. However, going back and reviewing the components of IRIS Ratio 5, we see that the company's combined ratio for 2017 was 94%, indicating that the company was operating at a profit from its underwriting results. Further, the investment income ratio in 2017 was 19%, which was higher than in 2018. This indicates that the decrease in the company's surplus was not a result of the company's income; net income earned in 2017 was positive, at $4.955 million (see page 4, line 20, column 2). We therefore need to look to the capital and surplus account within the Statement of Income for the reason.

Within column 2 of the capital and surplus account, we see the biggest decrease in surplus came from dividends to stockholders totaling $10.023 million in 2017. This was more than $7 million higher than

dividends made in 2018 and was the reason for the decrease in surplus greater than 10%. Further investigation would determine why the company made such a large dividend payment in 2017 and whether regulatory approvals were required and obtained.

LIQUIDITY RATIOS

The liquidity ratios focus on the amount of liquid assets that the insurance company has to cover its obligations. There are two liquidity ratios:

IRIS Ratio 9: Adjusted liabilities to liquid assets
IRIS Ratio 10: Gross agents' balances (in collection) to policyholders' surplus

**IRIS Ratio 9** provides an indication of the company's ability to pay its financial obligations out of assets that are readily convertible into acceptable forms of payment (i.e., cash). In this calculation, an insurance company's liabilities are adjusted to remove deferred agents' balances, as these balances are not liquid assets. Liquid assets include the following:

- Bonds, excluding affiliates
- Stocks, excluding affiliates
- Cash, cash equivalents and short-term investments, excluding affiliates
- Receivable for securities
- Investment income due and accrued

Unusual values are greater than or equal to 100%, suggesting that the company would not be able to pay its liabilities with current liquid assets as defined above.

The primary source of this information is the balance sheet, with investments in parent, subsidiaries and affiliates coming from Five-Year Historical Data, lines 42 through 45 in the 2018 Annual Statement.

The following provides the calculation of IRIS Ratio 9 for Fictitious.

| Data from Fictitious Insurance Company 2018 Annual Statement (USD) | | | | |
|---|---|---|---|---|
| | | 2018 (Current Year) | 2017 (Prior Year) | Source |
| (1) | Adjusted Liabilities | 63,862,000 | 63,141,000 | = (2) - (3) |
| (2) | Total liabilities | 68,976,000 | 68,068,000 | Page 3, Line 28, Columns 1 and 2, respectively |
| (3) | Deferred agent's balances | 5,114,000 | 4,927,000 | Page 2, Line 15.2, Columns 3 and 4, respectively |
| (4) | Liquid assets | 79,759,000 | 79,960,000 | = (5) + (6) + (9) + (10) + (11) – (12) |
| (5) | Bonds | 58,676,000 | 58,861,000 | Page 2, Line 1, Columns 3 and 4, respectively |
| (6) | Stocks | 19,374,000 | 19,116,000 | = (7) + (8) |
| (7) | Preferred stocks | 34,000 | 35,000 | Page 2, Line 2.1, Columns 3 and 4, respectively |
| (8) | Common stocks | 19,340,000 | 19,081,000 | Page 2, Line 2.2, Columns 3 and 4, respectively |
| (9) | Cash, cash equivalents and short-term investments | 983,000 | 1,233,000 | Page 2, Line 5, Columns 3 and 4, respectively |
| (10) | Receivables for securities | – | – | Page 2, Line 9, Columns 3 and 4, respectively |
| (11) | Investment income due and accrued | 726,000 | 750,000 | Page 2, Line 14, Columns 3 and 4, respectively |
| (12) | Investments in parent, subsidiary and affiliates | – | – | = (13) + (14) + (15) + (16) |
| (13) | Affiliated bonds | – | – | Five-Year Historical Data, Line 42, Columns 1 and 2, respectively |
| (14) | Affiliated preferred stocks | - | - | Five-Year Historical Data, Line 43, Columns 1 and 2, respectively |
| (15) | Affiliated common stocks | – | – | Five-Year Historical Data, Line 44, Columns 1 and 2, respectively |
| (16) | Affiliated short-term investments | – | – | Five-Year Historical Data, Line 45, Columns 1 and 2, respectively |
| **Results of IRIS Ratio 9** | | | | |
| IRIS Ratio 9 | | 80% | 79% | = (1) / (4) |

As displayed above, the result of IRIS Ratio 9 for Fictitious Insurance Company was 80% in 2018, about 20 points below the 100% benchmark for unusual values. This ratio was consistent with that in 2017 of 79%.

**IRIS Ratio 10** provides the ratio of agents' balances in the course of collection to policyholders' surplus. The purpose is to show how dependent a company's surplus is to assets that may not be collectible upon liquidation or are of questionable liquidity.

The source of the data is the balance sheet of the company's Annual Statement. Unusual values are greater than or equal to 40% of surplus.

The following provides the calculation of IRIS Ratio 10 for the current and prior year for Fictitious.

| Data from Fictitious Insurance Company 2018 Annual Statement (USD) |
|---|

| | 2018 (Current Year) | 2017 (Prior Year) | Source |
|---|---|---|---|
| **(1)** Uncollected premiums and agent's balances in course of collection | 2,626,000 | 2,866,000 | Page 2, Line 15.1, Columns 3 and 4, respectively |
| **(2)** Policyholders' surplus | 31,024,000 | 31,608,000 | Page 3, Line 37, Columns 1 and 2, respectively |
| **Results of IRIS Ratio 10** | | | |
| IRIS Ratio 10 | 8% | 9% | = (1) / (2) |

As displayed above, the result of IRIS Ratio 10 for Fictitious was 8% in 2018, which was well below the 40% threshold for unusual values. This was consistent with the result in 2017 of 9%.

RESERVE RATIOS

The reserve ratios focus on the development of an insurance company's net loss and LAE reserves for purposes of understanding reserve adequacy. These are probably the most important ratios to the property/casualty actuary and where the actuary places most attention, as these ratios are specifically commented on by the appointed actuary in the SAO.

There are three reserve ratios:

IRIS Ratio 11: One-year reserve development to policyholders' surplus
IRIS Ratio 12: Two-year reserve development to policyholders' surplus
IRIS Ratio 13: Estimated current reserve deficiency to policyholders' surplus

**IRIS Ratio 11** is the same one-year development test as provided in the Five-Year Historical Data exhibit within the Annual Statement (line 74 in the 2018 Annual Statement). It measures development in the company's net loss and LAE reserves over the past year, whether adverse or favorable, relative to prior year surplus. Essentially, this test looks to see how much surplus would have been absorbed or enhanced in the prior year as a result of adverse or favorable development in the corresponding net loss and LAE reserves. Adverse development is shown as an increase to reserves and therefore a positive number. Results of IRIS Ratio 11 greater than or equal to 20% are considered unusual.

The following table provides the calculation of IRIS Ratio 11 for Fictitious over the period 2015 through 2018.

| Data from Fictitious Insurance Company 2018 Five-Year Historical Data (USD) | | | | | |
|---|---|---|---|---|---|
| | 2018 | 2017 | 2016 | 2015 | 2014 |
| 73. Development in estimated losses and loss expenses incurred prior to current year | (875) | (1,354) | (1,618) | (1,935) | (918) |

| | | | | | |
|---|---|---|---|---|---|
| (Schedule P, Part 2, Summary, Line 12, Col. 11; *in 000s* | | | | | |
| 74. Percent of development of losses and loss expenses incurred to policyholders' surplus of prior year end (line 73 divided by Page 4, Line 21, Col. 1 x 100) | (2.8) | (3.8) | (5.0) | (5.6) | (2.6) |
| 26. Surplus as regards policyholders (PHS) | 31,024,000 | 31,608,000 | 35,793,000 | 32,572,000 | 34,567,000 |
| **Results of IRIS Ratios 11** | | | | | |
| IRIS Ratio 11 (= Line 74 above; = Line 73 / Line 26 prior * 1000) | -2.8% | -3.8% | -5.0% | -5.7% | |

As displayed in the above table, Fictitious' loss and LAE net reserves developed favorably over the period 2014 through 2018. As a result, IRIS Ratio 11 has historically been negative, ranging from -3% to -6%, and therefore well below the benchmark imposed for unusual values (greater than or equal to +20%).

The trigger of an "unusual" value is a current year ratio greater than or equal to 20%. This will capture reserve deficiencies in the immediate prior year. In addition to this warning, the AOS serves to notify regulators of any trends whereby development in three of the prior five years exceeds 5%. The AOS has a lower threshold than IRIS 11, as it serves to identify those companies that consistently underestimate their loss and LAE reserves.

**IRIS Ratio 12** is the same two-year development test as provided in the Five-Year Historical Data exhibit within the Annual Statement (line 76 of the 2018 Annual Statement). It measures development in the company's net loss and LAE reserves over the past two years, relative to surplus at the end of the second prior year. Similar to Ratio 11, results of test 12 greater than or equal to 20% are considered unusual.

The following table provides the calculation of IRIS Ratio 12 for Fictitious over the period 2016 through 2018.

| Data from Fictitious Insurance Company 2018 Five-Year Historical Data (USD) | | | | | |
|---|---|---|---|---|---|
| | **2018** | **2017** | **2016** | **2016** | **2014** |
| 75. Development in estimated losses and loss expenses incurred 2 years before the current year and prior year (Schedule P, Part 2, Summary, Line 12, Col. 12); *in 000s* | (2,602) | (2,906) | (3,680) | (2,544) | (1,059) |
| 76. Percent of development of losses and loss expenses incurred to policyholders' surplus of second prior year end (Line 75 divided by Page 4, Line 21, Col. 2 x 100) | (7.3) | (8.9) | (10.6) | (7.3) | (3.0) |
| 26. Surplus as regards policyholders (PHS) | 31,024,000 | 31,608,000 | 35,793,000 | 32,572,000 | 34,567,000 |
| **Results of IRIS Ratios 12** | | | | | |
| IRIS Ratio 12 (= Line 76 above; = Line 75 / Line 26 2nd prior * 1000) | -7.3% | -8.9% | -10.6% | | |

As displayed in the above table, Fictitious' IRIS Ratio 12 results have historically been negative, ranging from -7% to -10%, and therefore well below the benchmark imposed for unusual values (+20%).

**IRIS Ratio 13** is a hindsight test. It looks at a company's net outstanding loss and LAE reserves at the immediate prior two years relative to calendar year earned premium for those years and adds to the reserves development that has emerged over that period (one-year development for the immediate prior year; two-year development for the year prior to that). The test then applies the average of the resulting two "adjusted" loss ratios to earned premium for the recent year (2018) to determine what the outstanding loss reserve should be for that year (2018). A calculated deficiency in recorded loss and LAE reserves of 25% or more is deemed to be unusual.

The purpose of this test is to identify companies that may not have gotten their reserves "right" in the past. The expectation inherent in this test is if companies have had adverse development in the past, they will probably have adverse development in the future. Regulators want to see if companies who have had such adverse development have corrected for it in their current estimates.

The following are examples of considerations that should be made when reviewing the results of IRIS Ratio 13:

- The losses and premiums are not matched in Ratio 13; the numerator is unpaid loss and LAE for all accident years, whereas the denominator is earned premium for the current accident year.
    - This mismatch obstructs the usefulness of the ratio because growth or decline in premium volume, or changes in the mix of business between short- and long-tailed lines, will distort the "outstanding" loss ratio.

- Similarly, because it is strictly a quantitative test, IRIS Ratio 13 cannot take into account qualitative factors that may mitigate adverse development in the future on current reserves, such as change in mix of business.
    - A good example is a company that had observed adverse development on its commercial automobile liability (CAL) line of business in the prior two years but significantly changed their product mix in the current year to be more heavily weighted toward short-tailed homeowners business. As a result of this change in mix, such adverse development would not be expected in the future.

IRIS Ratio 13 requires use of the prior year Annual Statement. While we have not included the 2017 Annual Statement for Fictitious, we have included the required values in the following table to calculate the result of IRIS Ratio 13 for 2018.

| | 2016 | 2017 | 2018 | | Source |
|---|---|---|---|---|---|
| One-Year Development | | | (875) | (1) | Schedule P, Part 2, Line 12, Column 11; Five-Year Historical Data, Line 73 |
| Two-Year Development | | | (2,602) | (2) | Schedule P, Part 2, Line 12, Column 12; Five-Year Historical Data, Line 75 |
| Earned Premium | 25,618 | 25,535 | 26,512 | (3) | Stmt of Income, Line 1, divided by 1,000 |
| Loss Reserves | 41,643 | 40,933 | 41,894 | (4) | Page 3, Line 1, divided by 1,000 |
| LAE Reserves | 9,955 | 9,664 | 9,663 | (5) | Page 3, Line 3, divided by 1,000 |
| Policyholder Surplus | 35,793 | 31,608 | 31,024 | (6) | Page 3, Line 37, divided by 1,000 |
| **Result of IRIS Ratio 13** | **2016** | **2017** | **2018** | | **Source** |
| IRIS Ratio 13 | | | | | |
| Outstanding Loss Ratios | 201% | 198% | 194% | (7) | Sum of (4) thru (5), divided by (3) |
| Restated Loss and LAE Reserves | 48,995 | 49,722 | | (8) | Sum of (4) thru (5), + (1) for 2017 or + (2) for 2016 |
| Restated Outstanding Loss Ratios | 191% | 195% | | (9) | = (8) divided by (3) |
| Average Outstanding Loss Ratio | | | 193% | (10) | = average of row (9) |
| Implied Loss and LAE Reserves | | | 51,165 | (11) | = (10) * (3) |
| Actual Loss and LAE Reserves | | | 51,557 | (12) | Sum of (4) through (5) |
| Deficiency/(Redundancy) | | | (392) | (13) | = (11) – (12) |
| Ratio of Def/(Red to PHS) | | | -1% | (14) | = (13) divided by (6) |

As displayed in the above table, Fictitious' IRIS Ratio 13 result was -1% for 2018, which was well below the benchmark imposed for unusual values (greater than or equal to 25%).

# APPENDIX II. CANADIAN FINANCIAL STATEMENTS

## 2018 BALANCE SHEET FOR ALL PROPERTY/CASUALTY INSURANCE COMPANIES

## 2018 INCOME STATEMENT FOR ALL PROPERTY/CASUALTY INSURANCE COMPANIES

# Guideline

**Subject:** **Appointed Actuary: Legal Requirements, Qualifications and Peer Review**

**Category:** **Sound Business and Financial Practices**

**No: E-15** **Date: August 2003**
**Revised: November 2006**
**Revised: September 2012**

## Introduction

This Guideline describes the role of the Appointed Actuary in federally regulated insurance companies[1] and sets out some of OSFI's expectations with respect to that role. The Guideline is divided into three parts. The first part summarizes the major responsibilities of the actuary as described in the *Insurance Companies Act* (ICA) and the related Guidelines and Memoranda published by OSFI[2]. The second part deals with the actuary's qualifications required to carry out the Appointed Actuary's role, and the third part sets out OSFI's expectations with respect to peer review of the Appointed Actuary's work and reports.

Other OSFI Guidelines and Memoranda[3] contain additional information related to the responsibilities of the Appointed Actuary. Particularly important in this regard is the annual Memorandum to the Appointed Actuary. OSFI issues separate versions of the Memorandum to actuaries of life insurance companies and to actuaries of property and casualty insurance companies.

[1] In this Guideline, federally regulated insurance companies means Canadian insurance companies, including fraternal benefit societies and provincial companies (as that term is defined in subsection 2(1) of the *Insurance Companies Act*) and Canadian branches of foreign insurance companies, including foreign fraternal benefit societies.

[2] The legislative summary in this Guideline is not intended to be a substitute for provisions of the ICA. The reader is advised to refer to the provisions of the ICA and not to rely on the interpretation of those provisions contained in this Guideline.

[3] e.g., *Memorandum to the Appointed Actuary on the Report on the Valuation of Life Insurance Policy Liabilities*, *Memorandum for the Actuary's Report on Property and Casualty Insurance Business*, Guideline A: *Life Insurance Capital Adequacy Test*, Guideline E-12: *Inter-Segment Notes for Life Insurance Companies, Guideline D-9: Sources of Earnings Disclosure (Life insurance companies).*

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## Section 1: Legal Requirements of the Appointed Actuary

This part summarizes a number of sections in the ICA (the applicable sections of the ICA are shown in brackets) that relate to the appointment and role of the Appointed Actuary, as well as key provisions of related Guidelines and Memoranda published by OSFI. It also sets out the Superintendent's expectations regarding the annual reporting of companies' expected future financial condition. The ICA refers to the *actuary of the company*. In this Guideline, in keeping with common usage in the insurance industry, this person is referred to as the *Appointed Actuary* (AA).

### *a. Appointment of an Actuary*

Each company[4] must appoint an actuary of the company (49(1), 165(2)(i), 623(1), 660(1)(a)) and notify the Superintendent, in writing, of the appointment (357, 623(2)). The AA must be a Fellow of the Canadian Institute of Actuaries (FCIA) (2(1)).

The chief executive officer or the chief operating officer (or a person performing like functions) of a Canadian company or society or of a provincial company, or the chief agent of a foreign company, may not be appointed as AA unless authorized in writing by the Superintendent (359.1(1), 624.1(1)). In the case of a Canadian or provincial company, the chief financial officer or a person performing like functions may not be appointed as AA unless the audit committee of the company has provided a written statement to the Superintendent and the appointment is authorized by the Superintendent (359.2).

The directors of a company or, in case of a foreign company, the company itself, may revoke the appointment of the AA. If this happens, the company must notify the Superintendent, in writing, of the revocation (360, 625). An AA who resigns or whose appointment is revoked shall submit to the Superintendent and to the directors of a Canadian or provincial company or to the chief agent of a foreign company a written statement that includes the circumstances and reasons for the resignation or why, in the actuary's opinion, the appointment was revoked (363, 627(1)).

Where an AA resigns or their appointment is revoked, no person shall accept an appointment or consent to be appointed as AA before requesting and receiving from the previous company actuary the written statement that was submitted to the directors or the chief agent and to the Superintendent (364(1), 627(2)). An appointment may be accepted if no reply is received within fifteen days after a request was made (364(2), 627(3)).

[4] When unmodified, the term "company" refers to Canadian insurance companies, provincial companies (as that term is defined in subsection 2(1) of the *Insurance Companies Act*), fraternal benefit societies and Canadian branches of foreign insurance companies and foreign fraternal benefit societies.

### *b. Role and Duties of the Appointed Actuary*

The AA is required to value the actuarial and other policy liabilities as at the end of a financial year, and any other matters specified by the Superintendent. The AA's valuation is required to be in accordance with accepted actuarial practice, with such changes and any additional directions that may be made by the Superintendent (365, 629). The AA's report in the annual financial statement must opine that the policy liabilities are valued in accordance with accepted actuarial practice (367). It is expected that the valuation includes the selection of appropriate assumptions and methods, where each separate assumption is expected to be appropriate. It should be noted that the Superintendent may appoint an actuary to value certain liabilities or other matters if the Superintendent is of the opinion that it is necessary (365.1(1), 629.1(1)).

The liabilities shown in the annual return are required to include as a reserve the value of the actuarial and other policy liabilities (667(1)). The AA is required to make, and the company to file with its annual return, the Appointed Actuary's Report (AAR) on the policy liabilities and on any other matters the Superintendent may specify in a form determined by the Superintendent (667(2)). OSFI's annual Memorandum to the Appointed Actuary contains up-to-date instructions on the form and content of this report. Also, the AA shall, not less than twenty-one days before the date of the annual meeting of a Canadian or provincial company, make a report on the valuation of the liabilities to the shareholders and policyholders. The AA shall state whether, in the AA's opinion, the annual statement presents fairly the results of the valuation (367).

The AA is also required in each financial year to meet with and report to the directors or the chief agent on the company's financial position. When directed by the Superintendent, the AA must also report on the company's expected future financial condition (368, 630). A report on the company's expected future financial condition is normally prepared as described in the Canadian Institute of Actuaries (CIA) standard of practice on Financial Condition Testing (FCT).

The Superintendent expects that a report on the company's expected future financial condition will be prepared annually in compliance with the CIA standards. The FCT report should be presented to the directors of the company, or where the directors so choose, with an appropriate subcommittee of the board (e.g. audit committee, risk committee, etc.). An FCT report shall be based on the prior year end financial position or a more recent position. If the FCT report is presented to the board of directors in the second half of the financial year, then it shall include material changes in experience and in financial position up to the period of 90 days before the date of presentation. It is expected that the projection period for studies of life companies will be for at least five years and for P&C companies will be for at least three years. A copy of the report will be filed with OSFI within thirty days of presentation to the company's directors, but no later than the end of the calendar year.

In addition to the FCT, the AA is required to report, in writing, to the chief executive officer and the chief financial officer or to the chief agent of the company any matters that, in the AA's opinion, have material adverse effects on the financial condition of the company and that require

rectification. The AA must supply a copy of this report to the board of directors. Where, in the opinion of the AA, suitable action is not being taken to rectify these matters, the AA shall send a copy of the report to the Superintendent and advise the directors or the chief agent of the company that this has been done (369, 631).

When a company maintains a participating account (456), the directors of a company must establish a policy for determining the dividends and bonuses to be paid to the participating policyholders and a policy respecting the management of each of the participating accounts (165(2)(e)) and (165(2)(e.1)). The AA is required to report to the directors in writing on the fairness to participating policyholders of any policy established or amended under 165(2)(e) and 165(2)(e.1) and report at least once a year on its continuing fairness (165(3.1) and 165(3.2)).

The AA is required to report, in writing, to the directors on the fairness to participating policyholders of a proposed dividend, bonus or other benefit and whether it is in accordance with the dividend or bonus policy. The directors must consider the actuary's report before declaring the dividend, bonus or other benefit on participating policies (464(2)).

The AA is required to provide the company with a written opinion on whether the method selected for allocating investment income or losses and expenses to the participating account is fair and equitable to the participating policyholders (457, 458). The company must file a copy of the AA's written opinion with the Superintendent (459), together with a description of the allocation method.

Each year, the AA must report, in writing, to the directors on the fairness and equitableness of the allocation method used by the company (460). The AA is also required to report on whether payment to shareholders or a transfer to an account from which payments can be made to shareholders from the profits of the participating account would materially affect the company's ability to comply with its dividend or bonus policy or to maintain the level of dividends paid to participating policyholders (461(c)).

The directors of a company must establish criteria for changes made by the company to the premium or charge for insurance, amount of insurance or surrender value in respect of its adjustable policies (165(2)(e.2)). The AA is required to report to the directors in writing on the fairness to adjustable policyholders of the criteria established or amended under 165(2)(e.2)) and report at least once during each financial year on their continuing fairness (165(3.3)).

The AA is required to report, annually and in writing, to the directors on whether the changes the company made in respect of its adjustable policies during the preceding 12 months are in accordance with the criteria established under paragraph 165(2)(e.2) and are fair to the adjustable policyholders (464.1(1)).

Additional requirements and guidance concerning participating accounts can be found in the *Policyholders Disclosure Regulations* and OSFI's Guideline E-16 *Participating Account Management and Disclosure to Participating and Adjustable Policyholders.*

For insurance companies, OSFI's guideline: *Life Insurance Capital Adequacy Test* (LICAT) sets out requirements for the test of capital adequacy. The LICAT and Life Insurance Margin Adequacy Test (LIMAT) returns require the AA's confirmation that the instructions pertaining both to the LICAT guideline and to the annual return have been followed. OSFI also expects an opinion signed by the AA and a memorandum, both covering the areas where the calculation required discretion or where significant technical calculations, methodologies and judgements were applied.

**Section 2: Qualifications Required**

As previously noted, the AA is required to be an FCIA. The AA is, therefore, subject to the CIA's Rules of Professional Conduct. Rule 1 requires the AA to act honestly and to perform professional services with integrity, competence, skill and care. Rule 2 requires a CIA member to perform professional services only when the member is qualified to do so and meets applicable qualification standards. Professional services performed by a CIA member must, under Rule 3, meet applicable standards of practice.

The Superintendent may disqualify or remove a senior officer if the Superintendent is of the opinion that the senior officer is not suitable to hold the position (678.1(4) and 678.2(1)).

In assessing the suitability of an AA, the Superintendent expects that the AA has each of the following qualifications:

1. has appropriate Canadian practical experience, which is defined as Work in Canada[5] for at least three of the last six years, of which at least one year was performing valuation of Canadian actuarial liabilities of an insurance company;
2. has experience with the CIA's Standards of Practice and relevant insurance legislation and regulation;
3. is up to date with respect to the CIA's Continuing Professional Development requirement;
4. has not been the subject of an adverse finding by a CIA Disciplinary Tribunal. Where there has been such a finding, the Superintendent may nevertheless conclude that the AA is a suitable person if the circumstances of the case and other information support such a conclusion.

[5] "Work in Canada" is as defined in the CIA standards.

## Section 3: Peer Review of the Work of the Actuary

### *a. Background*

OSFI believes that regular peer review of certain work performed by the AA is of significant benefit both to OSFI and to a company's stakeholders by contributing to the safety and soundness of insurance companies, as described in the general objectives below. In addition, regular peer review is also of benefit to the AA by providing a source of independent advice and a means of consulting with other knowledgeable actuaries. Consequently, OSFI expects that all federally regulated insurance companies will appoint peer reviewers to implement peer review processes consistent with the OSFI criteria described below. The peer review should be conducted in accordance with accepted actuarial practice as specified in the CIA's *Standards of Practice*, in particular with section 1530 of these standards and any related educational notes.

### *b. General Objectives*

In requiring peer review of the work of the AA, OSFI has the following objectives:

- assist OSFI in its assessment of the insurer's safety and soundness: The AA has the responsibility for the valuation of policy liabilities in the financial statements and future financial condition reporting. Actuarial peer review is one tool OSFI uses in its assessment of the safety and soundness of insurers.
- be of benefit to the AA by providing (i) a source of independent consultation advice, and (ii) an additional source of professional education: This aids in narrowing the range of practice by AA's and improving the quality of their work. OSFI recognizes that this is not the only source of professional development for the AA.
- maintain and strengthen confidence in the work of the AA by the public, by insurance company management and directors and by supervisory authorities.

It is OSFI's intention to periodically meet with the peer reviewer to discuss the report and the findings of a review. It is also OSFI's intention to periodically meet with the AA to discuss the value being obtained by the peer review process.

### *c. Work to be Reviewed*

In order to assist in achieving OSFI's objective to assess insurers' safety and soundness, the reviewer is expected to:

1. ascertain that the work of the AA for the valuation of policy liabilities and ceded reinsurance assets is in compliance with accepted actuarial practice, as established by the Actuarial Standards Board and the CIA, and is consistent with any objectives or requirements established by OSFI in Regulations, Guidelines or the Memorandum to the AA (Note that the peer review work is not intended to duplicate the work of the external auditor. See Section 3d below.);

2. review the appropriateness and extent of internal and external material changes affecting the valuation of policy liabilities and ceded reinsurance assets. The reviewer should assess the risk of material misstatement or omissions arising from each change, as opposed to just the net effect of off-setting changes.
3. review the adequacy of procedures, systems and the work of others relied on by the AA, to the extent that these are not reviewed by the external auditor. This includes checks on data integrity and checks on procedures and methodologies used to validate the valuation calculations and results;
4. discuss with the AA the appropriateness of each of the assumptions used and the methods employed in the valuation of actuarial policy liabilities and ascertain that the assumptions are at the appropriate point in the range of accepted actuarial practice, given the circumstances of the company;
5. determine whether the Appointed Actuary's Report (AAR) sufficiently describes the valuation assumptions and valuation methodology employed by the AA;
6. for life insurance companies' LICAT/LIMAT returns, and for P&C companies' MCT/BAAT returns, and additionally, for mortgage insurance companies' MICAT returns, review the work of the AA in the areas that require actuarial assumptions and calculations and ensure the work is consistent with the report, if any, accompanying these filings;
7. review and discuss with the AA the methodology, assumptions and scenarios used for future financial condition reporting as required by the Superintendent in Section 1 of this Guideline, usually based on Financial Condition Testing (FCT); and
8. produce a written report(s) documenting the findings of the peer review.

The AA and management of the company should co-operate fully with the peer reviewer when the review is being carried out. Best efforts should be used to provide the reviewer with access to any required documents and to provide any additional explanations that may be relevant to the peer review.

Examples of material changes referenced in point 2 above include, but are not limited to:

- changes in key actuarial valuation assumptions or unusual adverse or favourable loss development;
- changes in methodology used in the valuation;
- changes in company operations or circumstances (e.g. acquisitions, investment policy, etc.);
- use of a revised valuation model (e.g. the review should cover general methodology, but does not need to be a full software audit or a recalculation.);
- material events that would suggest that valuation assumptions or methods may need to be modified (e.g. fundamental economic changes, changes in corporate legal structure, taxation law changes, material new line of business, etc.). For such events, a review should also be included of the valuation assumptions and methods for material blocks of

business that are subject to high sensitivity, but where no changes have been made.

### *d. Materiality Considerations*

The materiality level used for a company's financial statements is set by the external auditor based on the size of the company as a whole. For the purpose of peer review, both the reviewer and the AA should follow the description of materiality as contained in the CIA standards of practice. This requires materiality to be set from the point of view of the prime user of the work. As such, OSFI expects the materiality level for peer review to be appropriate at the line of business level at which the assumptions are set.

Materiality is a matter of professional judgement in the particular circumstances. While auditors may determine quantitative materiality for audit purposes at the total company level, materiality for the purposes of peer review cannot be determined solely by means of the application of a numeric threshold. General quantitative guidelines are not a substitute for the AA's and peer reviewer's professional judgement.

Materiality should become more rigorous as the company approaches any internal capital targets or regulatory capital thresholds.

### *e. Peer Review and External Audit*

The Canadian Institute of Chartered Accountants (CICA) and the Canadian Institute of Actuaries (CIA) have issued a paper entitled *Guide: Audits of Financial Statements That Contain Amounts That Have Been Determined Using Actuarial Calculations* (the CICA Guide). This paper provides guidance to external auditors for applying the requirements of the Canadian Auditing Standards (CASs). These standards state that the overall objective of the auditor is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement.

However, OSFI's objective and scope for peer review is to assess the safety and soundness of insurers by reviewing the AA's work for the financial statements at a more granular level. It is OSFI's view that each of the assumptions used should be independently reasonable, in accord with accepted actuarial standards, and that the methodology should be appropriate for each valuation model. OSFI expects the peer reviewer to express an opinion on the appropriateness of the policy liabilities at this more granular level and to provide feedback to the AA on the various aspects of their work. Therefore, since the objective of an external audit differs from the objective of a peer review, the audit work done to satisfy the audit requirements may not be sufficient to fully address the peer review requirements under this Guideline.

It is not OSFI's intention that the requirements for the peer review work duplicate the work of the external auditor, including any actuary assisting the auditor. The peer reviewer is not required to perform any detailed recalculations, as long as the reviewer determines that the controls and procedures used by the AA are adequate to identify potential errors in the valuation results. The peer reviewer is also not required to verify data or controls.

Where the auditor's actuarial specialist on the engagement team is not an FCIA, the peer reviewer should take extra care to verify that all CIA standards are met by the AA.

### *f. Contents of Peer Review Reports*

OSFI expects the peer reviewer to prepare a report documenting the findings of the reviews.

In the case of a Canadian or provincial insurance company, the peer reviewer's written report, or a summary of it, is expected to be submitted to the audit committee of the company's board of directors at the meeting subsequent to the completion of the report. In the case of a Canadian branch of a foreign insurance company, the report is to be submitted to the Chief Agent. In both cases, the full report and any summary report are to be submitted to OSFI.

The full peer review written report should include the following:

- a description of the work done by the reviewer (both the specifics of the work and its extent);
- the timing during the year when the work was carried out;
- the materiality level used for the review;
- the reviewer's statement of opinion with respect to the AA's compliance with accepted actuarial practice and any objectives or requirements established by OSFI in Regulations, Guidelines or Memoranda to the AA;
- the reviewer's observations with respect to changes made in methodology and assumptions;
- the reviewer's acknowledgement that no additional material changes should have been made;
- a list of any recommendations for further review or work by the AA in the coming year; and
- a brief description of the relationship with the AA to support the specific objectives of providing consultation aid, professional education and improving the quality of the AA's work.

### *g. Peer Review Cycle*

Each item of the AA's work described in subsection 3(c) above dealing with the financial statements should be reviewed and reported on at least once every three years, either all at once or in phases over a three-year cycle.

However, OSFI expects material changes (see subsection 3.c.2), if any, affecting the valuation of policy liabilities or ceded reinsurance assets to be reviewed and reported on annually. If there are no material changes, and the reviewer is in agreement that this is appropriate, the reviewer should still prepare and file a brief report to that effect.

A full review of the financial condition reporting (subsection 3.c.7) is expected to be prepared every three years. A limited annual review is only required to address the appropriateness of the scenarios employed. The peer reviewer is expected to prepare reports documenting the findings of both the full 3-year review and the limited annual review.

### *h. Timing of the Peer Review Work and Reports*

Due to the separate timing during the year of the AA's work for a company's financial statements and for financial condition reporting, there can be more than one report.

With regard to the financial statement related work (items c.1, c.2, c.3, c.4 and c.6 above), OSFI encourages the peer review to be pre-release (i.e. carried out prior to the release of the AA reporting on the statement related work).

The review of the AAR (item c.5 above) can be post-release.

The review of the future financial condition reports is also encouraged to be pre-release, but may be post-release depending on the circumstances of the company.

To qualify as a pre-release peer review, the reviewer must prepare the report and sign his/her opinion on, or shortly before, the date the AA reports on any work. For example, the filing of the Life-1, Life-2, P&C-1 or P&C-2 statements with OSFI is deemed to be AA reporting. For a pre-release peer review of work subject to external audit, the peer review report should be submitted to the audit committee or to the Chief Agent on, or shortly before, the date the AA reports on any work.

The complete peer review reports, and any summaries, are expected to be submitted to OSFI on a confidential basis. Copies of pre-release reports, both the full peer review report, and any summary, for financial statement work should be forwarded to OSFI based on the same deadlines that apply to filings of the Life-1, Life-2, P&C-1 or P&C-2 reports. For post-release reviews, the reviewer's report should be submitted to OSFI no later than thirty days after release of the AA's report on the work reviewed, and for future financial condition reports, no later than December 31.

If a member or employee of the insurer's external audit firm peer reviews work by the AA that is subject to audit, OSFI expects that such a peer review will be completed prior to the issuance of the audit opinion.

### *i. Selecting a Reviewer*

OSFI expects each company to hire a single peer reviewer for the company as a whole. If there are affiliate or subsidiary companies within one group, a single peer reviewer should be responsible for assessment of the entire group of companies, including the preparation of the peer review reports and opinions. The reviewer may, however, engage other sub-reviewers to

take advantage of particular competencies.

A peer reviewer is expected to meet the same qualification standards as are outlined in Section 2 of this Guideline with respect to the AA, including the Superintendent's minimum requirements for suitability.

It is good practice for the audit committee of the company's board of directors, or the chief agent in the case of a foreign company, to be advised of the terms of the peer review and the selection of the reviewer before the review is undertaken.

OSFI expects a reviewer to have sufficient experience with respect to the type of work to be reviewed. The reviewer's prior experience should include exposure to two or more unrelated insurance companies in order that the reviewer be familiar with the range of practices and assumptions used by actuaries in Canada. Knowledge of industry best practices is needed to ensure the review process appropriately fulfils its educational and consultative objectives.

OSFI expects a company to notify it in writing forthwith after hiring the peer reviewer, and to provide the reasons for any change in reviewer.

It is essential to the integrity of the peer review process that a reviewer be, and be seen to be, objective. The reviewer should, therefore, have no relationship with the insurer or with the AA that would in any way impair objectivity. The reviewer is expected to follow the CIA *Standards of Practice* as well as any additional OSFI requirements. In practice, without limiting the generality of the foregoing, OSFI believes that the following criteria should be applied in determining the objectivity of a reviewer:

- A reviewer may not be an employee of the company or any affiliated companies, and may not have been employed by the company or served as AA of the company during the three years prior to the date of the work being reviewed;
- A reviewer must not be a shareholder of, or have a direct financial investment (other than as a policyholder, depositor, beneficiary or insured) in the company;
- A reviewer may have an indirect interest (e.g. through a diversified mutual fund investment) in the company;
- If a member of a consulting firm is the AA, another member of the same firm may not be the peer reviewer;
- If a member of a consulting firm is involved in any actuarial work related to the financial statements or financial condition reporting for the company, another member of the same firm may be the peer reviewer only if he/she is not involved in this work for the company. In this context, "actuarial work" includes deciding on methodology, selecting assumptions and producing results.
- It is acceptable, and in fact expected, that the AA will be in contact with the peer reviewer during the course of the year to discuss the potential acceptability of changes in methodologies and assumptions that the AA is considering. However, the reviewer

should only provide advice with respect to these changes as part of the peer review work. This is similar to the interaction of a company with its external auditor.

- A peer reviewer may be an actuary working in the company's external audit firm, but companies are encouraged to not use as a peer reviewer an actuarial specialist who is a member of the audit team for the company.

OSFI regards an actuary working for the external audit firm to be sufficiently independent to be a peer reviewer. Using an actuary from the external audit firm can accommodate smaller and simpler companies. Notwithstanding this, OSFI expects large and complex companies to engage a peer reviewer who is not a member of its external audit firm. While OSFI recognizes that external audit firms are independent, it is of the view that a separate independent actuarial peer review is desirable since it will give additional perspective to large and complex companies.

However, as noted in subsection 3(h), if an actuary in the external audit firm's actuary is used for peer review, the peer review of any work that is subject to audit should be completed prior to the issuance of the audit opinion. In addition, this peer review work should be performed under a stand-alone engagement that is separate from the audit engagement.

Note that the criteria for objectivity for peer review purposes are not as restrictive as those found in OSFI's Guideline E-14, *Role of the Independent Actuary* (i.e., rules required for amalgamations of companies or buying/selling of blocks of business). In the latter case, the Independent Actuary represents, in the transaction, policyholders who rely on the Independent Actuary. In the case of peer review, OSFI, policyholders, management and shareholders continue to depend on the AA.

### *j. Changing a Reviewer*

To enhance the peer reviewer's objectivity and increase the educational value of the review process, a regular change or rotation of reviewers is expected. This allows the AA to obtain different perspectives. Therefore, OSFI expects that a reviewer will be changed at least once every two cycles (i.e., every six years). However, the company has the option of making more frequent changes.

If a peer reviewer is a member of a consulting or audit firm, another member of the same firm may be acceptable as a new peer reviewer. In this case, a previous reviewer may be reappointed to this role after a period of at least one cycle (i.e., at least three years).

When a company changes its peer reviewer, it should notify OSFI in writing forthwith stating the reasons for the change.

- END -

# Guideline

**Subject:** **Corporate Governance**

**Category:** **Sound Business and Financial Practices**

**Date:** **September 2018**

## I. Purpose and Scope of the Guideline

This guideline communicates OSFI's expectations with respect to corporate governance of federally regulated financial institutions (FRFIs). It applies to all FRFIs other than the branch operations of foreign banks and foreign insurance companies.[1]

OSFI's corporate governance expectations are principles-based and recognize that a FRFI's corporate governance practices may depend on its size; ownership structure; nature, scope and complexity of operations; strategy; and risk profile.

This guideline complements:

- Relevant provisions of the *Bank Act*, the *Insurance Companies Act*, the *Trust and Loan Companies Act*, the *Cooperative Credit Associations Act* and associated regulations; and,
- OSFI's *Supervisory Framework* and *Assessment Criteria*.[2]

### Corporate Governance for Financial Institutions

Corporate governance is a set of relationships between a company's management, its Board of Directors (Board), its shareholders, and other stakeholders. It also provides the structure through which the objectives of the company are set, and through which the means of attaining those objectives and monitoring performance are determined.

[1] Branches do not have a Board of Directors and, accordingly, this guideline does not apply to branch operations. OSFI looks to the Chief Agent or Principal Officer of a branch to oversee the management of the branch, including matters of corporate governance. The Chief Agent and/or Principal Officer of branches should refer to Guideline E-4A and Guideline E-4B, as appropriate.

[2] The terms "Senior Management" and "Operational Management" are used throughout this guideline, and are defined in OSFI's Supervisory Framework. For the purpose of this guideline, however, the Oversight Functions include: Financial; Risk Management; Compliance; Internal Audit; and Actuarial.

The quality of FRFI corporate governance practices is an important factor in maintaining the confidence of depositors and policyholders, as well as overall market confidence. This guideline, therefore, draws attention to specific areas of corporate governance that are especially important for financial institutions (e.g., risk governance), owing to the unique nature and circumstances of financial institutions and risks assumed relative to other corporations.[3]

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[3] Refer to **Annex A** for a description of the special nature of financial institutions.

## II. The Board of Directors

**1. *The Board is responsible for the FRFI's business plan, strategy, and risk appetite and culture. The Board oversees the FRFI's Senior Management and internal controls.***

### The Role of the Board

In addition to the roles and responsibilities of the Board outlined in federal legislation, the Board should discharge, at a minimum, the following essential duties in relation to the FRFI:

**1. Approve and oversee:**

*Strategy*

- Short-term and long-term business plan and strategy;
- Significant strategic initiatives (e.g., mergers and acquisitions);

*Risk Management and Oversight*

- Risk Appetite Framework;[4]
- Internal Control Framework;
- Significant policies, plans and strategic initiatives related to the management of, or that materially impact, capital and liquidity (e.g., internal capital targets, share issuance);
- Codes of ethics and conduct;

*Board, Senior Management and Oversight Functions*

- Appointment, performance review, and compensation of the CEO and other key members of Senior Management, including the heads of the Oversight Functions;
- Succession plans with respect to the Board, CEO and other key members of Senior Management, including the heads of the Oversight Functions;
- Mandate, resources and budgets for the Oversight Functions;

*Audit Plans*

- External audit plan, including audit fees and the scope of the audit engagement; and
- Internal audit plan.

The duties above are the primary responsibilities of the Board, and should be the main focus of the Board's attention and activities. The Board is not responsible for the ongoing and detailed operationalization of its decisions; this is the responsibility of Senior Management.

[4] Refer to **Annex B** for a description of the Risk Appetite Framework.

**2. Provide challenge, advice and guidance to the Senior Management of the FRFI, as appropriate, on:**

*Operational and Business Policies*

- Significant operational, business, risk and crisis management policies of the FRFI, including those in respect of credit, market, operational, insurance, regulatory compliance and strategic risks, and their effectiveness; and
- Compensation policy for all human resources that is consistent with the Financial Stability Board (FSB) *Principles for Sound Compensation*[5];

*Business Performance and Effectiveness of Risk Management*

- Performance of the FRFI relative to the Board-approved business plan and strategy;
- Effectiveness of the Risk Appetite Framework;
- Effectiveness of the Internal Control Framework;
- Effectiveness of the Oversight Functions; and
- Effectiveness of significant policies and plans related to management of capital and liquidity (e.g., stress testing, ICAAP/ORSA report).

The duties above are the responsibility of Senior Management. The Board has the discretion to decide the extent and nature of its input, and to provide challenge, advice and guidance on these matters and others.

The Board should be satisfied that the decisions and actions of Senior Management are consistent with the Board-approved business plan, strategy and risk appetite of the FRFI, and that the corresponding internal controls are sound.

**The Board and Senior Management**

**2. *Senior Management is responsible for implementing the Board's decisions and directing the operations of the FRFI.***

Senior Management is composed of the Chief Executive Officer (CEO) and individuals who are directly accountable to the CEO. This can include the heads of the Oversight Functions, such as the Chief Financial Officer (CFO), Chief Risk Officer (CRO), Chief Compliance Officer (CCO), Chief Internal Auditor (CIA), and Chief Actuary (CA), as well as the heads of major business platforms or units.

Senior Management is responsible for implementing the Board's decisions and directing the operations of the FRFI within the authority delegated to them by the Board, and in compliance with applicable laws and regulations.

[5] *Principles for Sound Compensation Practices,* Financial Stability Board (FSB), 2009.

In order to fulfil its responsibilities, the Board relies on Senior Management to provide sound advice on the organizational objectives, plans, strategy, structure and significant policies of the FRFI. Senior Management should set out information, options, potential trade-offs, and recommendations to the Board in a manner that enables the Board to focus on key issues and make informed decisions in a timely manner.

The Board should, in turn, understand the decisions, plans and policies being implemented by Senior Management and their potential impact on the FRFI.

**The Board and the Oversight Functions**

The Oversight Functions provide objective assessments to the directors to allow them to fulfill their responsibilities. The Oversight Functions identify, measure, and report on the FRFI's risks, assess the effectiveness of the FRFI's risk management and internal controls, and determine whether the FRFI's operations, results and risk exposures are consistent with the FRFI's risk appetite.

The heads of the Oversight Functions should have sufficient stature and authority within the organization, and should be independent from operational management. The heads of the Oversight Functions should have unfettered access and a functional reporting line to the Board or the appropriate Board committee.

The Board, with the support of Senior Management, should regularly assess the effectiveness of the FRFI's Oversight Functions.

**Boards of Subsidiaries or with FRFI Subsidiaries**

A FRFI that is part of a larger corporate group (another FRFI or company in Canada, or another company abroad) may be subject to or may adopt certain policies of the parent. In this situation, the subsidiary Board should be satisfied that these policies are appropriate for the FRFI's business plan, strategy and risk appetite, and comply with specific Canadian regulatory requirements.

If the parent is another FRFI, the parent Board should exercise adequate oversight of the activities of the subsidiary FRFI to be satisfied that the parent Board can meet its enterprise-wide oversight responsibilities applicable to FRFIs under this guideline.

**Board Effectiveness**

**3.** ***An effective Board should be independent and provide objective oversight of, thoughtful guidance, advice and constructive challenge to, Senior Management.***

The hallmarks of an effective Board include demonstrated sound judgment, initiative, proactiveness, responsiveness and operational excellence. Board members should strive to facilitate open communication, collaboration and appropriate debate in the decision-making process.

The Board should regularly assess its practices, and those of the Board committees, and should pursue strategies to enhance its overall effectiveness.

*Board Composition*

The Board should be diverse and, collectively, bring a balance of expertise, skills, experience, competencies and perspectives, taking into consideration the FRFI's strategy, risk profile, culture and overall operations. The contributions of individual directors will reflect their particular expertise, skills, experience and competencies.

Relevant financial industry and risk management expertise are key competencies for the Board. There should be appropriate representation of these skills at the Board and Board committee levels.

The Board should have a skills and competency evaluation process that is integrated with the overall Board succession or Board renewal plans, and that pays particular attention to the positions of the Chair of the Board and Chairs of the Board committees. Diversity should also be a factor in these plans.

*Board Independence*

The Board, collectively, should be independent from Senior Management and the operations of the FRFI.[6] Achieving independence can involve various Board structures and processes. Regardless of the approach, in all situations, OSFI views the separation of the Chair and CEO as critical (see next section). It is important that the Board's behaviour and decision-making processes are independent, objective and effective, taking into account the particular circumstances of the FRFI.

The Board's ability to act independently of Senior Management can be demonstrated through practices such as regularly scheduled Board and Board committee meetings that include sessions without Senior Management present.

To promote independence of thinking, the Board should have a director independence policy that considers, among other factors, the specific shareholder/ownership structure of the FRFI and director tenure. The recruitment process for new directors and the development of a director profile (both responsibilities of the Board) should emphasize the independence of Board members from Senior Management.

[6] The notion of "independent", as it applies in this guideline, is much broader than the notion of "non-affiliated", as defined in the federal financial institution statutes. It has been described and elaborated upon in various legal and international documents (e.g., securities law, international standards, and reports).

*Board and Board Committee Chairs*

> **4. *The role of the Board Chair should be separate from the CEO, as this is critical in maintaining the Board's independence and its ability to execute its mandate effectively.***

Effective Boards and Board committees require a Chair that is experienced, skillful and exhibits leadership that encourages open discussion and appropriate debate.

The Chair of the Board and the chairs of Board committees should have frequent dialogue with, and a strong level of influence among, other Board members and Senior Management, as well as access to all FRFI information and staff. Given the critical nature of the role, the Chair should also foster direct and on-going dialogue with regulators.

Board and Board committee chairs should be independent, non-executive[7] directors.

## III. Risk Governance

> **5. *Consistent with their specific roles and responsibilities and through their behaviours, actions and words, the Board and Senior Management should promote a risk culture that stresses integrity and effective risk management throughout the FRFI.***

**General**

Risk taking is a necessary part of a FRFI's business. Accordingly, business strategies incorporate decisions regarding the risks the FRFI is willing to undertake and how it will manage and mitigate those risks.

Risk governance is a distinct and crucial element of the FRFI's corporate governance. Risks may arise from direct exposures taken by the FRFI, subsidiaries, affiliates or counterparties, or indirectly through activities that create risks to the FRFI's reputation. FRFIs should be in a position to identify the significant risks they face, assess their potential impact and have policies and controls in place to manage them effectively.

**Risk Appetite Framework**

> **6. *The FRFI should have a Risk Appetite Framework that guides the risk-taking activities of the FRFI.***

The FRFI should develop a Risk Appetite Framework that takes into account its risk profile. It should be enterprise-wide and tailored to the FRFI's domestic and international business activities and operations. On an on-going basis, the FRFI should be satisfied that the Risk Appetite Framework remains appropriate relative to the risk profile of the FRFI, its long-term strategic plan and its operating environment.

[7] A non-executive director is a member of the Board who does not have management responsibilities within the FRFI.

The Risk Appetite Framework, as approved by the Board, should be well-understood throughout the organization and embedded within the culture of the FRFI. All operational, financial and corporate policies, practices and procedures of the FRFI should be guided by the Risk Appetite Framework.

The Risk Appetite Framework should set basic goals, benchmarks, parameters and limits (e.g., level of losses) as to the amount of risk the FRFI is willing to accept, taking into account various financial, operational and macroeconomic factors. It should consider the material risks to the FRFI, as well as the institution's reputation vis-à-vis policyholders, depositors, investors and customers.

The Risk Appetite Framework should be forward-looking and consistent with the FRFI's business model, overall philosophy, short-term and long-term strategy and corresponding risk mitigation. It is intended to provide boundaries on the on-going operations of the FRFI with respect to asset class and liability choices, activities and participation in markets that are not consistent with the stated risk appetite of the institution.[8]

The establishment of controls and a process to ensure their effectiveness are critical elements of the Risk Appetite Framework, as they help to ensure that the FRFI stays within the risk boundaries set by the Board.

**Oversight of Risk**

Risk management systems and practices will differ, depending on the scope and size of the FRFI and the nature of its risk exposures. To manage risks effectively, the Board and Senior Management must understand the risks attendant to the FRFI's business model, including each business line and product, and how they relate to the FRFI's strategy and Risk Appetite Framework.

*Board Risk Committee*

**7. *The Board should establish a Board Risk Committee[9] to oversee risk management on an enterprise-wide basis.***

Guided by the FRFI's Risk Appetite Framework, the Risk Committee should have an understanding of the types of risks to which the FRFI may be exposed, and the techniques and systems used to identify, measure, monitor, report on and mitigate those risks.

The Risk Committee should have a clear mandate. All Committee members, including the Chair, should be non-executives of the FRFI.

[8] Refer to **Annex B** for further details.

[9] For small, less complex FRFIs, in place of establishing a separate Risk Committee, the Board should be satisfied that it has the collective skills, time and information (i.e., appropriate reporting) to provide effective oversight of risk management on an enterprise-wide basis.

As part of its duty to oversee risk management of the FRFI, the Risk Committee should seek assurances from the CRO (or equivalent) that the risk management function of the FRFI is independent from operational management, is adequately resourced, and has appropriate status and visibility throughout the organization.

The Risk Committee should receive timely and accurate reports on significant risks of the FRFI and exposures relative to the FRFI's risk appetite (including approved risk limits). It should provide input on material changes to the FRFI's strategy and corresponding risk appetite. As well, the Risk Committee should be satisfied with the manner in which material exceptions to risk policies and controls are identified, measured, monitored, and controlled, as well as how exceptions/breaches are addressed.

*Chief Risk Officer*

**8. *The FRFI should have a senior officer (CRO or equivalent[10]) who is responsible for the oversight of all risks across the firm.***

The CRO is the head of the FRFI's risk management function. The CRO and the risk management function are responsible for identifying, measuring, monitoring and reporting on the risks of the FRFI on an enterprise-wide and disaggregated level, independently of the business lines or operational management.

The CRO should have sufficient stature and authority within the organization, and should be independent from operational management. The CRO should have unfettered access and a functional reporting line to the Board or the Risk Committee.

The CRO and risk management function should not be directly involved in revenue-generation or the management and financial performance of any business line or product of the FRFI. As well, the CRO's compensation should not be linked to the performance (e.g., revenue generation) of specific business lines of the FRFI.

While the CRO and the risk management function should influence the FRFI's risk-taking activities (e.g., to ensure that the FRFI's strategy or business initiative is operating within the stated risk appetite of the FRFI), the on-going assessment of risk-taking activities by the CRO and risk management function should remain objective.

The CRO should provide regular reports to the Board, the Risk Committee and Senior Management in a manner and format that allows them to understand the risks being assumed by the FRFI. The CRO should provide an objective view to the Risk Committee or the Board, as appropriate, on whether the FRFI is operating within the Risk Appetite Framework. The CRO should meet with the Risk Committee or the Board on a regular basis, with and without the CEO or other members of Senior Management present.

[10] For small, less complex FRFIs, the CRO role can be held by another executive of the FRFI (i.e., the executive has dual roles). Some FRFIs may not have a CRO position *per se*, but nonetheless can clearly identify an individual within the FRFI that is accountable to the Board and Senior Management for the same functions. In these cases, the dual role must not compromise the independence required of the CRO.

The CRO and risk management function should have processes and controls in place to assess the accuracy of any risk information or analysis provided by business lines in order to provide objective reporting to the Board, the Risk Committee and Senior Management.

## IV. The Role of the Audit Committee

Federal legislation requires that each FRFI establish an Audit Committee comprised of non-employee directors, a majority of whom are not "affiliated" with the institution. [11]

The statutory duties of the Audit Committee, as described in federal legislation, include reviewing the annual statements of the FRFI, evaluating and approving internal control procedures for the institution, and meeting with the Chief Internal Auditor and/or the Appointed Actuary[12] to discuss the effectiveness of the institution's internal controls and the adequacy of practices for reporting and determining financial reserves.[13]

The Audit Committee should approve the FRFI's audit plans (internal and external). Audit plans should be risk-based and address all the relevant activities over a measurable cycle. Where part or all of the internal audit function is outsourced, the Audit Committee should still be responsible for overseeing the performance of the FRFI's internal audit function as a whole.

The Audit Committee, not Senior Management, should recommend to the shareholders the appointment and removal of the external auditor. It should also agree to the scope and terms of the audit engagement, and review and recommend for approval by the Board the engagement letter and remuneration of the external auditor. Annually, the Audit Committee should report to the Board on the effectiveness of the external auditor.

The Audit Committee should discuss with Senior Management and the external auditor the overall results of the audit, the annual and quarterly financial statements and related documents, the audit report, the quality of the financial statements and any related concerns raised by the external auditor.

The Audit Committee should be satisfied that the financial statements present fairly the financial position, the results of operations and the cash flows of the FRFI. The Audit Committee should meet with the external auditor, the CIA and other heads of the Oversight Functions, as appropriate, with and without the CEO or other members of Senior Management present.

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[11] As defined in the federal legislation and the *Affiliated Persons Regulations* associated with each financial institution's governing statute.

[12] The role of the Appointed Actuary is outlined in OSFI's Guideline E-15, *Appointed Actuary: Legal Requirements, Qualifications and Peer Review*.

[13] FRFIs should ensure that they are in compliance with the relevant securities requirements in respect of the Audit Committee in the relevant jurisdictions.

## V. Supervision of FRFIs

### The Role of Corporate Governance in OSFI's Supervisory Process

Effective corporate governance is an essential element in the safe and sound functioning of FRFIs. The Board and Senior Management are designated as key Oversight Functions in OSFI's *Supervisory Framework*.

Effective oversight of the business and affairs of an institution by its Board and Senior Management is essential to the maintenance of an efficient and cost-effective supervisory system. It helps protect depositors and policyholders, and allows OSFI to use the work of the FRFI's internal processes and functions, thereby reducing the amount of supervisory resources needed for OSFI to meet its mandate.

In addition, in situations where a FRFI is experiencing problems, or where significant corrective action is necessary, the important role of the Board is heightened and OSFI requires significant Board involvement in seeking solutions and overseeing the implementation of corrective actions.

### OSFI's Supervisory Assessment

OSFI supervises FRFIs to assess their financial condition and monitor compliance with the applicable federal legislation. Supervision is carried out within a framework that is risk-focused.[14] OSFI has developed a comprehensive set of assessment criteria, key among which is the quality of oversight and control provided by the Board and Senior Management.

OSFI conducts supervisory work and monitors the performance of FRFIs to assess safety and soundness, the quality of control and governance, and regulatory compliance. The Board and Senior Management are ultimately accountable for the safety and soundness of the FRFI, as well as its compliance with federal legislation. As such, OSFI's reports and findings can provide useful input to the Board's own oversight of the FRFI. Open communication between the Board and regulators helps promote the mutual trust and confidence essential to the efficiency of OSFI's principles-based approach to supervision. Accordingly, OSFI expects to be promptly notified of substantive issues affecting the FRFI.

The Board should understand the regulatory environment within which the FRFI and its subsidiaries operate. It should be informed of the results of supervisory work by OSFI and other regulators, and should follow-up with Senior Management accordingly.

The Board should consider regulatory findings in its on-going evaluation of Senior Management and oversight function performance, recognizing that primary responsibility for identifying weaknesses rests with the Board and Senior Management.

OSFI will undertake a number of approaches, including discussions with the Board, Board committees, Senior Management and Oversight Functions, as well as the review of Board and

[14] Refer to OSFI's *Supervisory Framework*.

Board committee material, in order to assess the effectiveness of the FRFI's corporate governance. OSFI will look to gain insight into the discussions and deliberations at the Board and Committee level, including those with and without Senior Management. This may include understanding the Board's behaviour and assessing the objectivity, degree of challenge and independence in the decision making process.

Where separate Oversight Functions do not exist, OSFI will look to other functions, processes or controls to assess the independent oversight provided.

**Changes to the Board or Senior Management**

OSFI recognizes that FRFIs make independent decisions regarding the nomination of Board members or appointment of Senior Management in the course of conducting their day-to-day business.

As part of OSFI's on-going supervisory process, however, FRFIs should notify OSFI, as early as possible in the process, of any potential changes to the membership of the Board and Senior Management, and any circumstances that may adversely affect the suitability of Board members and Senior Management.

The process and criteria used by the FRFI in the selection process for Board and/or Senior Management members should be transparent to OSFI. Information regarding the qualifications of candidates of the Board and Senior Management should be provided to OSFI.

## *Annex A – The Special Nature of Financial Institutions*

A number of factors set financial institutions apart from other business firms, and has led them to be subject to generally higher levels of regulation, including:

- The effectiveness of the economy depends significantly on how well its financial services sector functions. Relative to non-financial businesses, the failure of a financial institution can have a greater impact on members of the public who may have placed a substantial portion of their life savings with the institution and who may be relying on that institution for day-to-day financial needs. There is also potential in some circumstances for system-wide impacts from failures or material impacts in selected markets, given the interconnectedness of the financial system. Safety and soundness concerns are, therefore, of particular importance for financial institutions.
- Financial institutions may have high ratios of debt-to-equity (leverage), making them more vulnerable to unexpected adverse events.
- Financial institutions can experience severe liquidity problems if their customers or counterparties lose confidence in their safety and soundness.
- Financial institutions may accept funds from the public and often deal in long-term financial commitments, which are predicated on a high degree of confidence in the long-term stability and soundness of the institutions making these commitments.
- The value of many financial institutions' assets and liabilities can be volatile and may be difficult to price accurately. Similarly, financial institutions may issue and trade in complex financial instruments, which can be difficult to evaluate properly and can materially and rapidly affect the risk profile of an institution.
- Financial institutions can have large mismatches between the term of their assets and liabilities. This can result in material funding or investment risks.

These characteristics create unique challenges for the governance of financial institutions and underscore the importance of effective risk management systems and rigorous internal controls. They point to the need for knowledgeable, independent oversight exercised by or on behalf of the Board, along with the additional assurance of regulatory oversight, to provide assurance to markets on the reliability of reporting and disclosure. Also, as a consequence of being a regulated industry, the governance processes of financial institutions are subject to review and may be influenced by the views of OSFI and other regulatory bodies.

Finally, many financial institutions have complex organizational structures with a large number of entities (some of which may not be regulated) used to deliver different financial products and services. For these organizations, the relationship between the parent company and its subsidiaries merits special consideration and the effective governance of subsidiaries should be a high priority for the Board and Senior Management.

## *Annex B – Risk Appetite Framework*

The Risk Appetite Framework should contain a risk appetite statement and risk limits, as well as an outline of the roles and responsibilities of those overseeing the implementation of the Risk Appetite Framework. The Risk Appetite Framework is an integral part of the FRFI's overall enterprise-risk management framework.

**Risk Appetite Statement**

The risk appetite statement reflects the aggregate level and type of risk that the FRFI is willing to accept in order to achieve its business objectives. Key features of the risk appetite statement are:

- It should be linked to the FRFI's short-term and long-term strategic, capital and financial plans, as well as compensation programs.
- It includes qualitative and quantitative measures that can be aggregated and disaggregated.
    - Qualitative measure may include:
        - Significant risks the FRFI wants to take and why;
        - Significant risks the FRFI wants to avoid and why;
        - Attitude towards regulatory compliance; and
        - Underlying assumptions and risks.
    - Quantitative measures may include:
        - Measures of loss or negative events (such as earnings, capital or liquidity, earnings per share at risk or volatility) that the FRFI is willing to accept.
- It should be forward-looking.
- It should consider normal and stressed scenarios.
- It should aim to be within the FRFI's risk capacity (i.e., regulatory constraints).

**Risk Limits**

Risk limits are the allocation of the FRFI's risk appetite statement to:

- Specific risk categories (e.g., credit, market, insurance, liquidity, operational);
- The business unit or platform level (e.g., retail, capital markets);
- Lines of business or product level (e.g., concentration limits); and
- More granular levels, as appropriate.

Risk limits are often expressed in quantitative terms, and are specific, measurable, frequency-based and reportable.

## Implementation of the Risk Appetite Framework

Once approved by the Board, the Risk Appetite Framework should be implemented by Senior Management throughout the organization as an integral part of the overall enterprise risk management framework of the FRFI. The Risk Appetite Framework should align with the organization's strategy, its financial and capital plans, its business unit strategies and day-to-day operations, as well as its risk management policies (e.g., risk limits, risk selection/underwriting guidelines and criteria, etc.) and compensation programs.

Where the Risk Appetite Framework sets aggregate limits that will be shared among different units, the basis on which such limits will be shared should be clearly identified and communicated.

Effective control, monitoring and reporting systems and procedures should be developed to ensure on-going operational compliance with the Risk Appetite Framework, including the following:

- The CRO (or equivalent) should ensure that aggregate risk limits are consistent with the FRFI's risk appetite statement.
- The CRO (or equivalent) should include in regular reports to the Board or Risk Committee, and Senior Management, an assessment against the risk appetite statement and risk limits.
- Internal Audit should routinely assess compliance with the Risk Appetite Framework on an enterprise-wide basis and in its review of units within the FRFI.

The Board and Senior Management should receive regular reports on the effectiveness of, and compliance with, the Risk Appetite Framework. These reports should include a comparison of actual results versus stated Risk Appetite Framework measures. Where breaches are identified, action plans should exist and be communicated to the Board. The Risk Appetite Framework should be an integral part of the Board's discussions and decision-making processes.

# Guideline

**Subject: Earthquake Exposure Sound Practices**

**No: B-9 Date: February 2013**

## I. Purpose and Scope

Catastrophic losses from exposure to earthquakes may pose a significant threat to the financial wellbeing of many Property & Casualty (P&C) insurers and reinsurers (insurers). As such, insurers must effectively measure, monitor and limit their exposures in accordance with a prudent risk appetite and risk tolerance.

The complexities associated with managing earthquake exposures, combined with the potential severity of losses, the difficulty of mitigating the risk post-event, and the high public profile of a major earthquake require insurers to have comprehensive policies and procedures in place, along with an appropriate level of oversight to ensure that they are effective.

This Guideline sets out OSFI's expectations for policies and procedures applicable to insurers[1] that write business materially exposed to earthquake-related losses. These policies and procedures should form part of an insurer's overall catastrophe risk management. OSFI recognizes that individual insurers may have differing earthquake exposure risk management depending on, among other factors, their: size; ownership structure; nature, scope and complexity of operations; corporate strategy; and risk profile.

The Guideline also sets out common parameters and other factors to be considered when calculating probable maximum loss (PML). This information, when compared to the level of financial resources available, will enable an insurer to assess its capacity and financial preparedness to handle claims that may arise from a major earthquake. As further described in the Guideline, insurers are expected to report certain earthquake exposure information to OSFI on an annual basis.

[1] For the purposes of this guideline, "insurers" refers to all federally regulated property and casualty insurers, including domestic insurance companies that are not mortgage insurance companies and foreign insurance companies in respect of their insurance business in Canada.

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## II. Key Principles

The following key principles are intended to assist insurers in developing prudent approaches to managing their earthquake risk. OSFI will assess an insurer's earthquake exposure risk management policy against these principles and, where considered necessary, will require remedial action consistent with its early intervention mandate.

Prudent use of catastrophe models to measure earthquake exposure risk is an important component of sound earthquake exposure risk management, and the following principles make numerous references to sound practices for use of catastrophe models. At the same time, there is significant uncertainty associated with catastrophe modeling, and it is critical that all users of the output of catastrophe models are conscious of this uncertainty. Accordingly, good corporate governance for this risk and other risk management techniques, such as risk limits, risk transfer and risk avoidance should also be considered by the insurer, and references in this guideline to these alternatives are as important as the guidance on the use of catastrophe models.

***1. Earthquake Exposure Risk Management*** **-** Insurers should have a sound and comprehensive earthquake exposure risk management policy that is overseen by senior management.

*Policies & Procedures*

Earthquake policies and procedures should document the significant elements of the insurer's approach to managing its earthquake risk.

Earthquake policies and procedures should include:

- the institution's risk appetite and risk tolerance for earthquake insurance;
- data management practices;
- exposure aggregation monitoring and reporting;
- appropriate understanding, selection and use of earthquake models, including considerations for model limitations, uncertainties and non-modelled classes of business;
- identification and estimation of relevant PML factors;
- the nature and adequacy of financial resources available in relation to the PML;
- contingency plans to ensure adequate claim handling resources and continued efficient operations;
- consideration of potential increases in claim and operating costs following a major loss event.

*Senior Management*

OSFI expects senior management[2] to oversee the development of earthquake policies and procedures and to ensure that they are effectively implemented. At a minimum, senior management should review and discuss the policies and procedures as part of its periodic review of overall catastrophe risk management.

Senior management is responsible for implementing the policies and procedures throughout the organization. Exposure management is an ongoing process, and effective management may require internal reporting more frequently than annually. The exposure should be managed across the insurer, considering the accumulation of all related risks, such as insurance, reinsurance, investments and operations.

Senior management should ensure that appropriate internal controls exist to monitor the effectiveness of, and operational compliance with, the earthquake policies and procedures on an on-going basis. Further, there should be controls in place to ensure the nature of exposure to earthquake risk (low frequency / high impact) is appropriately aligned with the design of management and broker/agent compensation plans. While all oversight functions are expected to contribute to this effort, the actuarial function can play a very important role in reviewing models used to determine exposures, the adequacy of the reinsurance programs to mitigate these exposures, and the pricing of earthquake insurance when delegated by senior management.

Please refer to OSFI's *Corporate Governance Guideline* for OSFI's expectations of insurer Boards of Directors in regards to operational, business, risk and crisis management policies.

***2. Earthquake Exposure Data*** **-** Earthquake exposure data needs to be appropriately captured and regularly tested for consistency, accuracy and completeness.

The data required to run earthquake models goes beyond that traditionally used to rate insurance policies. Improving data consistency, accuracy and completeness is one area where an insurer's efforts can significantly reduce the uncertainty inherent in earthquake exposure measurement. Good earthquake exposure data facilitates the management of this risk through risk transfer, pricing and monitoring against limits as well as catastrophe modeling.

*Data Integrity*

An insurer's earthquake policies and procedures should reflect a strong commitment by senior management to obtain consistent, accurate and complete data to estimate the insurer's exposure to earthquake risk. Senior management needs to understand the data requirements of the model(s) used and place a high priority on the quality of data and its timely capture. Data quality needs to be considered within the context of the assumptions and requirements of the earthquake model(s) used. If necessary, new processes should be put in place to improve data quality.

[2] For foreign company branch operations in Canada, OSFI looks to the Chief Agent to oversee the management of the branch.

Responsibilities for the accuracy of data should be clearly defined, both within the insurer and in dealing with outside parties. Since intermediaries such as brokers and agents are often responsible for data collection, senior management should have policies and procedures in place to ensure that the data collected meets the insurer's requirements.

As data quality is often impacted by a trade-off between completeness and accuracy, the insurer should implement a quality control process around data collection and entry including the adoption of criteria to measure data completeness and accuracy. Processes may include:

- Scoring data quality at the time of underwriting;
- Conducting remediation of sources providing inadequate data;
- Developing and implementing safeguards to prevent data collectors from miscoding business; and
- Investing in technology to improve data quality.

*Data verification*

OSFI expects insurers to have processes in place to verify that their databases are accurately capturing all the data received. While the quality of individual risk data is often the key driver of overall data quality, an aggregate analysis and assessment of the overall data quality of a portfolio/group of risks may be the most appropriate approach when the (re)insurer has limited access to the underlying policy processing system. This will often be the case for assumed reinsurance portfolios. Accordingly, reinsurers should have processes in place to evaluate the quality of data submitted by their cedants.

*Data limitation*

Senior management also needs to understand the data limitations and the level of possible errors in the data. While perfect data is the objective, it will be difficult or impossible to achieve this in practice. Therefore, senior management must understand the possible impact of data limitations on the results projected by the model and make prudent adjustments to the model estimates.

Data should be subject to periodic (at least annually) review by individuals independent of those responsible for data collection and data quality. While the insurer may use reinsurance brokers for this independent review, this work should extend beyond the regular review of data prior to submission to reinsurers to include a specific report that acknowledges that their work is being done to support the insurer's compliance with this guideline. Less frequent and broader external reviews of the insurer's data policies, testing and reporting can add value by providing independent benchmarking.

These reviews should cover the completeness, accuracy and consistency of the exposure data as well as the processes applied and the steps taken to achieve adequate data completeness and accuracy. Documentation of the testing and sign-off from the reviewers should be obtained. Testing, which should ensure that errors and erroneous coding are not occurring, could include:

- Summarizing data by key occupancy, construction and geocode and reviewing statistics such as the percent of data with known attributes, the amount of bulk coding and the most frequently observed values;
- Comparing year-to-year exposure changes;
- Using historical loss experience, if available, to identify specific portfolio coding issues and behaviour vs. model construction and assumptions; and
- Running portfolio-specific data quality sensitivity tests as a regular part of portfolio risk analysis process and incorporating into risk decision making

Senior management needs to ensure a plan is developed and documented to address all concerns identified in the reviews and select an appropriate time frame for updating the portfolio exposure data and model results.

***3. Earthquake Models -*** Earthquake models should be used with a sound knowledge of their underlying assumptions and methodologies, as well as with a high degree of caution that reflects the significant uncertainty in such estimates.

*Use of Earthquake Models*

Insurers are expected to utilize theoretically sound earthquake models as part of their earthquake exposure management. Considering that earthquake-related PMLs are derived from a complex set of variables and related assumptions, earthquake models are an essential tool in providing a systematic approach to such estimates. However, while earthquake models continue to be refined as new information emerges, they have significant limitations and a high degree of inherent uncertainty. This uncertainty is demonstrated by the material differences observed when model estimates are compared to actual events and by the wide range of results from model to model. Nevertheless, when users appropriately consider model limitations and uncertainties, they provide a basis for PML estimation and reinsurance arrangements. Similarly, models further enhance their value as a risk management tool when they are also used to monitor earthquake exposure accumulations and to assist in underwriting decisions.

*Sound Earthquake Model Practices*

Earthquake models are available through a variety of means. They may be licensed from various commercial vendors and maintained in-house or run by third parties on behalf of the insurer. Some insurers have also developed their own in-house models. In any event, in order to ensure that earthquake models are appropriately used, insurers are expected to:

- Document how the use of earthquake models fits within their earthquake risk management process, including PML estimates and, where applicable, how models are used to monitor exposure accumulations and make underwriting decisions;
- Understand current modelling alternatives and why the model used is appropriate for the applicable insurance portfolio;

- Ensure there are adequately qualified staff to appropriately run the models on a regular basis when earthquake models are used in-house;
- Have a sound understanding of the key assumptions, methodologies and limitations underlying the model used, including:
    - how different settings (i.e., switches) impact PML estimates; insurers will need to justify why selected settings are appropriate when they vary from those recommended per the model;
    - ability to handle related factors such as demand surge, fire following and business interruption;
    - how changes in portfolio characteristics influence PML variability;
    - modelled losses versus non-modelled losses;
- Understand model uncertainty and how this is addressed in determining capital adequacy and related reinsurance arrangements;
- Have evidence that the granularity and quality of data used is appropriate for the model;
- When more than one model is used and they produce materially different results, be able to explain the results of their efforts to identify the key reasons for the differences and explain how this work is reflected in parameterization and adjustments (if any) to the particular model(s) chosen as the basis for PML.

*Model Versions*

While the use of an earthquake model is important, it represents only one element in an insurer's risk management framework for earthquake exposure. While models continue to be refined, they retain inherent uncertainty. To counter the inherent uncertainty in models, insurers should consider the use of more than one model. Insurers should implement material updates to commercially available models in a timely manner. More specifically, it is expected that within one year of the release of any material change in a model, the revised model will be used, or an explanation provided for why not. Insurers are to identify the model(s) and version they are using.

When using vendor software to determine its PML, it is important for an insurer to understand the model, its purpose, use and limitations. The model documentation should provide sufficient detail to understand the model methodology, parameters, mathematical basis, limitations and specific insurer modelling refinements used.

Where an earthquake model has been developed in-house, it is expected to be updated on a regular basis and periodically tested for functionality and comparative PML results against other commercially available models.

*Model Validation*

Model validation provides important information on the performance of models.

An important element of this process is to ensure that the model prudently captures risks based upon actual events. This analysis should demonstrate that, over a sufficient historical period, the model-based measurement of loss is consistent with actual losses. To the extent that insufficient data exists to validate the model, an alternative but suitable prudent proxy should be employed for validation.

For example, one could compare the few major historical earthquake events to the losses produced by similar events in the model and assess any divergences. Given the limited number of major historical Canadian earthquakes, it may also be helpful to consider the lessons learned from earthquake events in other parts of the world.

One could also compare the modelled tail losses to market prices for reinsurance coverage. This test is not a validation *per se* but, rather, will serve as a source for further investigations. An outcome might be that the risk is treated more conservatively than the vendor model would show.

The setting and refinement of model parameters, including loadings for non-modelled risks or costs, should be robust and reflect the results of the model validation process.

The model validation process should be documented, and should clearly identify any limitations of the model or the data in assessing risk and should discuss how any such material deficiencies are mitigated.

***4. PML Estimates -*** PML estimates should properly reflect the total expected ultimate cost to the insurer, including considerations for data quality, non-modelled exposures, model uncertainty and exposures to multiple regions.

While models are an essential tool in assisting insurers in the management of their earthquake exposures, they are limited in their capabilities. This results in a significant degree of uncertainty. As such, while insurers are required to develop PML estimates in accordance with this principle, they are also encouraged to consider other exposure limitation techniques, such as concentration limits by geography, occupancy and/or construction type.

*Data Quality*

Senior management needs to understand the possible impact of data limitations on the results projected by the model and to make prudent adjustments to the model estimates. While the upward PML adjustment may be necessary to offset some data shortcomings, it should be understood that a large adjustment to the PML for data quality is not a substitute for appropriate data capture.

*Non-Modelled Exposures and Risk Factors*

Many risks cannot be, or are difficult to, adequately consider within an earthquake model. As such, insurers need to take an inventory of exposures and risk factors relevant to their business and identify those that are not included in the model used. These non-modeled exposures and risk factors may include:

- exposure growth between the date of the data and the end of the relevant period of exposure;
- contingent business interruption;
- auto and marine insurance;
- claims handling expenses;
- adequacy of *insurance to value*;
- guaranteed replacement cost;
- increased seismicity after a large event; and
- blanket coverage and coverage extensions or clauses (i.e., debris removal).

These exposures and risk factors may be relatively small individually; however, their accumulation may be significant and need to be considered as part of an insurer's earthquake PML.

*Model Uncertainty*

Many vendor models now automatically recognize the uncertainty associated with the conversion from the location specific estimate of ground motion to damage levels (secondary uncertainty) in their standard model outputs. There are other sets of assumptions in the earthquake models that are in a continuous process of being updated and refined. When considering its PML as a measure of the potential financial impact on the insurer, senior management needs to prudently factor in a margin of safety to reflect the uncertainty of these additional assumptions.

*Exposures to Multiple Regions*

Earthquake PMLs have historically been based on the larger of the British Columbia or Quebec PMLs. This approach understates the PML for insurers with significant exposures in both earthquake zones. It also ignores earthquake exposure elsewhere, which can have a material impact. Earthquake PMLs should be estimated and reported to senior management based on Canada wide[3] exposure for foreign insurers or worldwide exposure for Canadian insurers, as well as any regulatory capital requirements. Therefore, insurers are expected to take account of risk which may result from exposures to more than one region.

***5. Financial Resources and Contingency Plans -*** Insurers need to ensure that they have an adequate level of financial resources and appropriate contingency plans to successfully manage through a major earthquake.

Throughout this section, PML refers to a dollar amount that includes adjustments for data quality, non-modelled exposures and model uncertainty as outlined in Principle 4 above.

[3] Throughout this guideline, Canada wide includes business reported on a company's P&C-2 by virtue of the application of Part XIII.

*Financial Resources*

Earthquake policies and procedures should quantify an insurer's willingness to take on earthquake insurance risk and outline how the insurer's financial resources cover its gross PML. Insurers should refer to OSFI's Guideline Minimum Capital Test for Federally regulated Property and Casualty Companies (MCT Guideline) in order to determine if they meet the regulatory test of financial preparedness for earthquakes. The following represent financial resources that could be used to support the insurer's earthquake exposures:

1. *Capital and Surplus*

The MCT Guideline defines capital and surplus, making appropriate distinctions between Canadian incorporated insurers and Canadian branches of foreign insurance companies. It also specifies the maximum retention that can be supported within the insurer's capital and surplus.

2. *Earthquake Reserves*

Refer to the MCT Guideline for details on the earthquake reserve requirements**.**

3. *Reinsurance Coverage*

While most insurers will use a catastrophe reinsurance treaty for this purpose, other reinsurance, such as per risk, quota share and whole account excess of loss may provide substantial coverage for some insurers. When an insurer includes non-catastrophe reinsurance in its determination of available financial resources, it needs to be prepared to demonstrate that it has appropriately considered per event limits and other events, terms and conditions that would otherwise exhaust coverage provided by these other types of reinsurance. In the case of whole account reinsurance insurers may need to use a full stochastic model.

Formal reinsurance agreements, evidenced by written documents between Canadian incorporated insurance companies and their foreign parent institutions, constitute a traditional mechanism with which insurers manage their insurance exposure. Other supporting financial arrangements provided by parent companies, such as letters of credit or guarantee facilities, cannot be used to support the insurer's gross PML exposure.

Reinsurance programs should be arranged following Guideline B-3 *Sound Reinsurance Practices and Procedures*. Insurers that participate in global catastrophe reinsurance program must consider:

- on-going protection for Canadian operations (e.g., exhaustion of layers or program by other events); and
- adequacy and recoverability if other regions are impacted by the same event.

4. *Capital Market Financing*

Insurers can enter into innovative financing transactions designed to hedge their risk for a catastrophic event. In some cases, these are standby capital market financing facilities that become operative when a catastrophe occurs. Insurers also need to respect the provisions of the *Borrowing* (*Property and Casualty Companies and Marine Companies) Regulations*. Prior approval from OSFI is required before these instruments can be recognized as a financial resource under the MCT Guidelines.

*Contingency Plans*

Insurers must have contingency plans in place to ensure continued efficient business operations. The contingency plan should address the key elements of claims management, such as emergency communications links, availability and adequacy of claims and adjustment service personnel, and off-site systems back-up, that also includes reinsurance records.

## III. Regulatory Reporting

All insurers will be required to annually file an *Earthquake Exposure Data* form with OSFI. The form will be updated periodically, and detailed instructions will be provided each year.

Insurers without material earthquake exposure should submit a letter stating this fact.

Note that earthquake exposure can exist for automobile and marine policies, as well as property policies, can arise from secondary sources such as fire-following and tsunami, and that all Canadian regions have some exposure to shake events.

## IV. Guideline Administration

### *Supervisory Information*

Enhanced transparency will allow OSFI to better understand the economic impacts and risks associated with an insurer's earthquake exposure. Insurers with material exposure to earthquake risk are required to maintain and provide to OSFI, upon request, their policies that govern the earthquake exposure risk management, including PML and supporting reinsurance programs. Insurers with material exposure to earthquake risk should ensure that their overall catastrophe risk management provides enough coverage with respect to the B-9 principles.

OSFI expects the insurer's annual Financial Condition Testing (FCT) will consider an earthquake event, and that the FCT report will either include this scenario or document the rational for not including it. The actuary would ensure consistency with any minimum return period for an earthquake event that may be required by the regulator.

### *Capital / Asset Requirements*

Earthquake exposure may be a major risk to an insurer. If an insurer fails to meet the principles set out in this Guideline, on a case-by-case basis, OSFI may use its discretionary authority to adjust the insurer's capital / asset requirements or target solvency ratios.

### *Reporting*

A senior officer of an insurer should regularly report to senior management, details on the earthquake exposure and how the exposure is being managed. The officer should confirm the insurer's practices and procedures meet, except as otherwise disclosed, the standards set in this Guideline. The report should also include the PML and detail the financial resources that support the exposure. The report should be available to OSFI, upon request.

### *Implementation*

Each insurer should file an approved copy of its earthquake exposure risk management policy with its designated OSFI Relationship Manager.

## V. Description of Terms

The following descriptions of terms are provided for their usage in the context of this guideline.

***Earthquake Insurance*** **-** principally covers the damage from the initial shaking, but also covers the related risks of fire following and tsunami. Shake insurance is usually sold as an endorsement or rider to an insurance policy and covers damages to property and contents. In addition, it may include business interruption, additional living expenses, automobile damage and other types of coverage. Fire following an earthquake is the second main earthquake-related risk. Studies have shown that fire following damages can be quite severe because of broken gas mains, curtailment of water supply, road blockage for fire engines, etc. Coverage for damages from this risk may be sold as an endorsement or rider to an insurance policy (where legislation permits) or, alternatively, is sold as part of the standard property policy. Depending upon how this insurance is packaged, business interruption, additional living expenses, etc., may also be covered. A tsunami may also follow an earthquake that occurs under an ocean or a large lake. Although the impact of tsunamis is limited to coastal areas, their destructive power can be enormous and insurers should consider whether or not coverage (direct or indirect, as noted above for quake and fire following) is provided by any of their policies.

***Probable Maximum Loss (PML)*** **-** the threshold dollar value of losses beyond which losses caused by a major earthquake are unlikely. When probabilistic models are used, PML is return period loss, which is defined as the dollar level of loss expected to be exceeded once in every X years. Gross PML is the PML amount *after* deductibles but *before* catastrophic and other reinsurance protection. Net PML is the PML *after* deductibles and catastrophic and other reinsurance protection. Note that a gross net PML (that is, after deductibles and other reinsurance inuring to the catastrophe treaty) is relevant to the placement of the catastrophe treaty; it is not directly relevant to this guideline.

***Risk Appetite*** **-** the total level and type of risk exposure that an insurer is willing to undertake to achieve its objectives. Risk Appetite is often a qualitative assessment.

***Risk Tolerance*** **-** specific parameters and/or limits on the level and amount of risk an insurer is willing to accept/retain.

## VI. Other OSFI Guidance

This Guideline is complementary to, and should be read in conjunction with, other OSFI guidance that implicitly or explicitly addresses various elements of earthquake or governance, including:

The *Supervisory Framework* - describes the principles, concepts, and core process that OSFI uses to guide its supervision of federally regulated financial institutions (FRFIs).

*Minimum Capital Test* - for federally regulated property and casualty insurers;

*Corporate Governance* Guideline - provides information to Boards and management of insurers about OSFI's expectations on corporate governance;

Guideline B-3: *Sound Reinsurance Practices and Procedures* - sets out expectations for effective reinsurance practices and procedures; and

Guideline E-17: *Background Checks on Directors and Senior Management of Federally Regulated Entities (FRE)* - outlines principles to assess the suitability and integrity of directors and senior management by FREs.

# DRAFT Guideline

**Subject:** **Minimum Capital Test**

**No:** **A** **Effective Date:** **January 1, 2023**[1]

Subsection 515(1) of the *Insurance Companies Act (ICA)* requires Federally Regulated Property and Casualty Insurance Companies (property and casualty companies) to maintain adequate capital. Subsection 608(1) of the *ICA* requires foreign property and casualty companies operating in Canada on a branch basis (foreign property and casualty companies) to maintain an adequate margin of assets in Canada over liabilities in Canada. The Minimum Capital Test (MCT) Guideline is not made pursuant to subsections 515(2) and 608(3) of the *Act*. However, the minimum and supervisory target capital standards set out in this guideline provide the framework within which the Superintendent assesses whether a property and casualty company that is not a mortgage insurance company[2] maintains adequate capital pursuant to subsection 515(1) and whether a foreign property and casualty company maintains an adequate margin pursuant to subsection 608(1). Notwithstanding that a property and casualty company that is not a mortgage insurance company may meet these standards, the Superintendent may direct the property and casualty company to increase its capital under subsection 515(3) or the foreign property and casualty company to increase the margin of assets in Canada over liabilities in Canada under subsection 608(4).

This guideline outlines the capital framework, using a risk-based formula, for target and minimum capital/margin required, and defines the capital/assets that are available to meet the minimum standard. The MCT determines the minimum capital/margin required and not the level of capital/margin required at which property and casualty companies that are not mortgage insurance companies must operate.

Foreign property and casualty companies are reminded that the MCT is only one element in the determination of the required assets that must be maintained in Canada by foreign property and casualty companies. Foreign property and casualty companies must vest assets in accordance with the Adequacy of Assets in Canada test as prescribed in the *Assets (Foreign Companies) Regulations.*

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[1] This version of the guideline is effective for insurers' reporting years beginning on or after January 1, 2023. For example, an insurer with an October year-end should implement this version of the guideline starting on November 1, 2023. Early adoption of this version of the guideline is not permitted.

[2] Capital requirements for Federally Regulated Property and Casualty insurance companies that are mortgage insurance companies are set out in the guideline: *Mortgage Insurer Capital Adequacy Test* (MICAT).

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# Chapter 1. Overview and General Requirements

The Minimum Capital Test (MCT) Guideline applies to Canadian property and casualty insurance companies that are not mortgage insurance companies and foreign property and casualty companies operating in Canada on a branch basis, collectively referred to as insurers. Chapter 3 of this guideline, *Foreign Companies Operating in Canada on a Branch Basis*, defines assets available for foreign property and casualty companies operating in Canada on a branch basis (foreign companies). The MCT Guideline uses generic expressions that are meant to apply to both Canadian insurers and foreign companies; e.g., capital available also refers to assets available for Branch Adequacy of Assets Test (BAAT) purposes, capital required refers to margin required for BAAT purposes and capital adequacy refers to margin adequacy for BAAT purposes.

This chapter provides an overview of the MCT Guideline and sets out general requirements. More detailed information on specific components of the capital test is contained under subsequent chapters.

Further guidance concerning some of the requirements of the MCT Guideline may be found in other guidelines and advisories available on OSFI's website under the Property and Casualty Insurance Companies section.

- Table of OSFI Guidelines
- Guidelines and Related Advisories – Capital
- Regulatory and Legislative Advisories

## 1.1. Overview

### *1.1.1. Minimum and target capital requirements under the MCT*

Under the MCT, regulatory capital requirements for various risks are set directly at a pre-determined target confidence level. OSFI has elected 99% of the expected shortfall (conditional tail expectation or CTE 99%) over a one-year time horizon as a target confidence level.[3]

The risk factors defined in this guideline are used to compute capital requirements at the target level. The resulting MCT capital requirements are then divided by 1.5 to derive the minimum capital requirements. The MCT ratio is expressed as the capital available over the minimum capital required.

### *1.1.2. Risk-based capital adequacy*

Insurers are required to meet the MCT capital requirements at all times. The definition of capital available to be used for this purpose is described in chapter 2 and includes qualifying criteria for

[3] As an alternative, a value at risk (VaR) at 99.5% confidence level or expert judgement was used when it was not practical to use the CTE approach.

capital instruments, capital composition limits, and regulatory adjustments and deductions. The definition encompasses capital available within all subsidiaries that are consolidated for the purpose of calculating the MCT ratio.

Insurers' minimum capital requirements are calculated on a consolidated basis and determined as the sum of the capital requirements at the target level for each risk component, less the diversification credit, divided by 1.5.

The minimum capital requirements are calculated as follows:

*Sum of capital required for:*

i.) Insurance risk (reference chapter 4):
   a. Liability for incurred claims and unexpired coverage;
   b. Reinsurance held with unregistered insurers[4];
   c. Earthquake and nuclear catastrophe reserves.

ii.) Market risk (reference chapter 5):
   a. Interest rate;
   b. Foreign exchange;
   c. Equity;
   d. Real estate;
   e. Right-of-use assets;
   f. Other market exposures.

iii.) Credit risk (reference chapter 6):
   a. Counterparty default for balance sheet assets;
   b. Counterparty default for off-balance sheet exposures;
   c. Collateral held for unregistered reinsurance and self-insured retention (reference section 4.3.3).

iv.) Operational risk (reference chapter 7).

*Less:*

v.) Diversification credit (reference chapter 8).

*Divided by 1.5.*

### *1.1.3. Scope of consolidation*

The capital adequacy requirements apply on a consolidated basis. The consolidated entity includes the insurer and all of its directly or indirectly held subsidiaries, which carry on business

[4] For the definition of a registered reinsurer, see section 4.3.2

that the parent could carry on directly in accordance with the *Insurance Companies Act* (ICA), including holding companies (e.g. property and casualty insurance and ancillary businesses such as agencies, brokerages and mutual funds). It therefore excludes:

- life insurance subsidiaries,
- other regulated financial institutions carrying on business that the parent would not be permitted to carry on directly under the *Insurance Companies Act* (ICA).

Whether a subsidiary should be consolidated is determined by the nature of the subsidiary's business (i.e. whether it carries on business related to property and casualty insurance), not the location where the subsidiary conducts its business (e.g. a U.S. property and casualty insurance subsidiary). All other interests in subsidiaries are considered "non-qualifying" for capital purposes and are excluded from capital available and capital required calculations.

### *1.1.4. Foreign companies*

The margin requirement for foreign companies is set forth under the BAAT in chapter 3. The BAAT covers each of the risk components, and is determined using risk factors and other methods that are applied to assets under the control of the Superintendent, to specific assets under the control of the Chief Agent, and to liabilities in Canada.

The BAAT is only one element in the determination of the required assets that must be maintained in Canada by foreign companies. Foreign companies must vest assets in accordance with the Adequacy of Assets in Canada test, as prescribed in the *Assets (Foreign Companies) Regulations.*

### *1.1.5. Interpretation of results*

The MCT is a standardized measure of capital adequacy of an insurer. It is one of several indicators that OSFI uses to assess an insurer's financial condition and should not be used in isolation for ranking and rating insurers.

## 1.2. General Requirements

### *1.2.1. MCT supervisory capital ratio for federally regulated insurers*

The MCT ratio is expressed as a percentage and is calculated by dividing the insurer's capital available by minimum capital required, which is derived from capital required calculated at the target level for specific risks.

Federally regulated insurers are required, at a minimum, to maintain an MCT ratio of 100%. OSFI has established an industry-wide supervisory target capital ratio (supervisory target) of 150% that provides a cushion above the minimum requirement and facilitates OSFI's early intervention process. The supervisory target provides additional capacity to absorb unexpected losses and addresses capital needs through on-going market access.

OSFI expects each insurer to establish an internal target capital ratio (internal target) per Guideline A-4 *Regulatory Capital and Internal Capital Targets*, and maintain on-going capital, above this target. However, the Superintendent may, on a case-by-case basis, establish an alternative supervisory target (in consultation with an insurer) based upon the insurer's individual risk profile.

Insurers are required to inform OSFI immediately if they anticipate falling below their internal target and to lay out their plans, for OSFI's supervisory approval, to return to their internal target. OSFI will consider any unusual conditions in the market environment when evaluating insurers' performance against their internal targets.

Insurers are expected to maintain their MCT ratios at or above their established internal targets on a continuous basis. Questions about an individual insurer's target ratio should be addressed to the Lead Supervisor at OSFI.

### *1.2.2. Audit requirement*

Insurers are required to engage their auditor appointed pursuant to section 337 or 633 of the ICA to report annually on the MCT or BAAT prepared as at fiscal year-end, in accordance with the relevant standards for such assurance engagements, as promulgated by the Canadian Auditing and Assurance Standards Board (AASB).

The annual audit report of the MCT or BAAT must be prepared separately from the audit report for the financial statements, and is to be filed no later than 90 days after the insurers' fiscal year-end for Canadian companies and no later than May 31st for foreign companies.

### *1.2.3. Allocation Methodology*

Insurers may need to undertake an allocation exercise to determine capital requirements in accordance with this guideline. In doing so, OSFI expects that:

1. Allocation methods should be systematic and have a rationale that is reasonable.

2. Allocation methods for capital purposes should align with allocation methods used by the insurer for other business decision-making purposes.

3. Allocation methods should be reasonably consistent with respect to similarity of characteristics, and over time. Any occasional changes to the allocation methodology should be justifiable.

4. Allocation methods should be determined without bias. Insurers should be aware if their choices of allocation methods routinely bias results and adjust methods accordingly.

5. Allocation methods should allocate amounts of revenues and costs with reasonable accuracy[5], and consider all reasonable and supportable information available at the reporting date, without undue cost or effort.

An insurer should have effective monitoring and internal reporting procedures to comply, on an ongoing basis, with the above principles. An insurer should document the basis of its allocation methodology, as well as any changes to significant judgements in the allocation methods, including how it meets the principles set out above.

## 1.3. Transitional Arrangements

### *1.3.1. Business combinations and portfolio transfers entered into and effective on or prior to June 30, 2019*

The contractual service margin (CSM) arising from favorable development from business combinations and portfolio transfers entered into on or prior to June 30, 2019, can be included in capital available. This transitional arrangement will apply for a period of three years after this version of the guideline becomes effective.

[Additional IFRS 17 transition arrangements to be determined.]

[5] Allocation methods of loss component amounts, where relevant, should reflect the expected relative profitability of each MCT class of insurance grouping.

# Chapter 2. Definition of Capital Available

This chapter establishes requirements for the adequacy and appropriateness of capital resources used to meet capital requirements, having regard to their ability to meet insurers' obligations to policyholders and creditors and to absorb losses in periods of stress. This includes the determination of the criteria for assessing the quality of capital components for inclusion in capital available and the composition of capital available for regulatory purposes, focusing on the predominance of highest quality capital.

## 2.1. Summary of Capital Components

The four primary considerations for defining the capital available of a company for the purpose of measuring capital adequacy are:

- availability: the extent to which the capital element is fully paid in and available to absorb losses;
- permanence: the period for, and extent to which, the capital element is available;
- absence of encumbrances and mandatory servicing costs: the extent to which the capital element is free from mandatory payments or encumbrances; and
- subordination: the extent to which and the circumstances under which the capital element is subordinated to the rights of policyholders and creditors of the insurer in an insolvency or winding-up.

Regulatory capital available will consist of the sum of the following components: common equity or category A capital, category B capital, and category C capital.

### *2.1.1. Category A capital (i.e. common equity)*

- Common shares issued by the insurer that meet the category A qualifying criteria as described below;
- Surplus (share premium) resulting from the issuance of instruments included in common equity capital and other contributed surplus[6];
- Retained earnings;
- Earthquake, nuclear and general contingency reserves;
- Accumulated other comprehensive income; and

[6] Where repayment is subject to Superintendent's approval.

- Residual interest, reported either as equity or as a liability, of owner-policyholders of mutual entities.[7]

Retained earnings and accumulated other comprehensive income include interim profit or loss. Dividends are removed from capital available in accordance with applicable accounting standards.

#### *2.1.1.1. Qualifying criteria for inclusion of capital instruments in category A for regulatory capital purposes*[8]

For an instrument to be included in capital available under category A, it must meet all of the following criteria:

1. Represents the most subordinated claim in liquidation of the insurer.
2. The investor is entitled to a claim on the residual assets that is proportional with its share of issued capital, after all senior claims have been paid in liquidation (i.e. has an unlimited and variable claim, not a fixed or capped claim).
3. The principal is perpetual and never repaid outside of liquidation (setting aside discretionary repurchases or other means of effectively reducing capital in a discretionary manner that is allowable under relevant law and subject to the prior approval of the Superintendent).
4. The insurer does not, in the sale or marketing of the instrument, create an expectation at issuance that the instrument will be bought back, redeemed or cancelled, nor do the statutory or contractual terms provide any feature that might give rise to such expectation.
5. Distributions are paid out of distributable items (retained earnings included). The level of distributions is not in any way tied or linked to the amount paid in at issuance and is not subject to a contractual cap (except to the extent that an insurer is unable to pay distributions that exceed the level of distributable items or to the extent that distribution on senior ranking capital must be paid first).

[7] OSFI understands that there is not an explicit reference in the accounting standards to what may constitute residual interest of owner-policyholders of mutual entities or how such an amount might be calculated. However, OSFI understands some insurers/stakeholders are attempting to define the concept and make a determination as to whether its inclusion on the statement of financial position is an acceptable interpretion of IFRS 17. Inclusion of the concept in the draft MCT 2023 is not meant to express a view as to its appropriateness or acceptability under accounting standards but rather to illustrate its potential treatment for regulatory capital purposes, were it to be found acceptable in nature and amount under accounting standards.

[8] The criteria also apply to non-joint stock companies, such as mutuals, taking into account their specific constitution and legal structure. The application of the criteria should preserve the quality of the instruments by requiring that they are deemed fully equivalent to common shares in terms of their capital quality as regards loss absorption and do not possess features that could cause the condition of the insurer to be weakened as a going concern during periods of market stress.

6. There are no circumstances under which the distributions are obligatory. Non-payment is, therefore, not an event of default.
7. Distributions are paid only after all legal and contractual obligations have been met and payments on more senior capital instruments have been made. This means that there are no preferential distributions, including in respect of other elements classified as the highest quality issued capital.
8. It is in the form of issued capital that takes the first and proportionately greatest share of any losses as they occur. Within the highest quality capital, each instrument absorbs losses on a going concern basis proportionately and *pari passu* with all the others.
9. The paid-in amount is recognized as equity capital (i.e. not recognized as a liability) for determining balance sheet solvency.
10. It is directly issued and paid-in[9] and the insurer cannot directly or indirectly have funded the purchase of the instrument. Where the consideration for the shares is other than cash, the issuance of the common shares is subject to the prior approval of the Superintendent.
11. The paid-in amount is neither secured nor covered by a guarantee of the issuer or related entity[10] or subject to any other arrangement that legally or economically enhances the seniority of the claim.
12. It is only issued with the approval of the owners of the issuing insurer, either given directly by the owners or, if permitted by applicable law, given by the Board of Directors or by other persons duly authorized by the owners.
13. It is clearly and separately disclosed on the insurer's balance sheet, prepared in accordance with the relevant accounting standards.

### *2.1.2. Category B capital*

- Instruments issued by the institution that meet category B criteria and do not meet the criteria for classification as category A, subject to applicable limits;
- Surplus (share premium) resulting from the issuance of instruments meeting category B criteria.

#### *2.1.2.1 Qualifying criteria for inclusion of capital instruments in category B for regulatory capital purposes*

[9] Paid-in capital generally refers to capital that has been received with finality by the institution, is reliably valued, fully under the institution's control and does not directly or indirectly expose the institution to the credit risk of the investor.

[10] A related entity can include a parent company, a sister company, a subsidiary or any other affiliate. A holding company is a related entity irrespective of whether it forms part of the consolidated insurance group.

For an instrument to be included in capital available under category B, it must meet all of the following criteria:

1. Issued and paid-in in cash or, subject to the prior approval of the Superintendent, in property.
2. Subordinated to policyholders, general creditors and subordinated debt holders of the insurer.
3. Is neither secured nor covered by a guarantee of the issuer or related entity or other arrangement that legally or economically enhances the seniority of the claim vis-à-vis policyholders and creditors.[11]
4. Is perpetual, i.e. there is no maturity date and there are no step-ups[12] or other incentives to redeem[13]
5. May be callable at the initiative of the issuer only after a minimum of five years:
    a. To exercise a call option, an insurer must receive prior approval of the Superintendent; and
    b. An insurer's actions and the terms of the instrument must not create an expectation that the call will be exercised; and
    c. An insurer must not exercise a call unless:
        i. It replaces the called instrument with capital of the same or better quality, including through an increase in retained earnings, and the replacement of this capital is done at conditions that are sustainable for the income capacity of the insurer[14]; or
        ii. The insurer demonstrates that its capital position is well above the supervisory target capital requirements after the call option is exercised.
6. Any repayment of principal (e.g. through repurchase or redemption) must require approval of the Superintendent and insurers should not assume or create market expectations that such approval will be given.
7. Dividend/coupon discretion:

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[11] Further, where an institution uses a special purpose vehicle to issue capital to investors and provides support, including overcollateralization, to the vehicle, such support would constitute enhancement in breach of criterion #3 above.

[12] A step-up is defined as a call option combined with a pre-set increase in the initial credit spread of the instrument at a future date over the initial dividend (or distribution) rate after taking into account any swap spread between the original reference index and the new reference index. Conversion from a fixed rate to a floating rate (or vice versa) in combination with a call option without any increase in credit spread would not constitute a step-up.

[13] Other incentives to redeem include a call option combined with a requirement or an investor option to convert the instrument into common shares if the call is not exercised.

[14] Replacement issuances can be concurrent with, but not after, the instrument is called.

a. the insurer must have full discretion at all times to cancel distributions/payments;[15]

b. cancellation of discretionary payments must not be an event of default or credit event;

c. insurers must have full access to cancelled payments to meet obligations as they fall due;

d. cancellation of distributions/payments must not impose restrictions on the insurer except in relation to distributions to common shareholders.

8. Dividends/coupons must be paid out of distributable items.
9. The instrument cannot have a credit sensitive dividend feature, i.e., a dividend/coupon that is reset periodically based in whole or in part on the insurance organization's credit standing.[16]
10. The instrument cannot contribute to liabilities exceeding assets if such a balance sheet test forms part of national insolvency law.
11. Other than preferred shares, category B instruments included in capital available must be classified as equity per relevant accounting standards.
12. Neither the insurer nor a related party over which the insurer exercises control or significant influence can have purchased the instrument, nor can the insurer directly or indirectly have funded the purchase of the instrument.
13. The instruments cannot have any features that hinder recapitalization, such as provisions that require the issuer to compensate investors if a new instrument is issued at a lower price during a specified timeframe.
14. If the instrument is not issued directly by the insurer (e.g. it is issued out of a special purpose vehicle or SPV), proceeds must be available immediately without limitation to an insurer in a form that meets or exceeds all of the other criteria for inclusion in capital available as specified under category B. For greater certainty, the only assets the SPV may hold are intercompany instruments issued by the insurer or a related entity with terms and conditions that meet or exceed criteria specified under category B. Put differently, instruments issued to the SPV have to fully meet or exceed all of the eligibility criteria under category B as if the SPV itself was an end investor – i.e. the insurer cannot issue a lower quality capital or senior debt instrument to an SPV and have

[15] A consequence of full discretion at all times to cancel distributions/payments is that "dividend pushers" are prohibited. An instrument with a dividend pusher obliges the issuing insurer to make a dividend/coupon payment on the instrument if it has made a payment on another (typically more junior) capital instrument or share. This obligation is inconsistent with the requirement for full discretion at all times. Furthermore, the term "cancel distributions/payments" means to forever extinguish these payments. It does not permit features that require the insurer to make distributions/payments in kind at any time.

[16] Institutions may use a broad index as a reference rate in which the issuing institution is a reference entity; however, the reference rate should not exhibit significant correlation with the institution's credit standing. If an institution plans to issue capital instruments where the margin is linked to a broad index in which the institution is a reference entity, the institution should ensure that the dividend/coupon is not credit-sensitive.

the SPV issue higher quality capital instruments to third-party investors so as to receive recognition as qualifying capital under category B.

Purchase for cancellation of Category B capital instruments is permitted at any time with the prior approval of the Superintendent. For further clarity, a purchase for cancellation does not constitute a call option as described in the above Category B qualifying criteria.

Tax and regulatory event calls are permitted during an instrument's life subject to the prior approval of the Superintendent and provided the insurer was not in a position to anticipate such an event at the time of issuance.

Dividend stopper arrangements that stop payments on common shares or Category B instruments are permissible provided the stopper does not impede the full discretion the insurer must have at all times to cancel distributions or dividends on the Category B instrument, nor must it act in a way that could hinder the recapitalization of the institution pursuant to criterion number 13 above. For example, it would not be permitted for a stopper on a Category B instrument to:

- attempt to stop payment on another instrument where the payments on the other instrument were not also fully discretionary;
- prevent distributions to shareholders for a period that extends beyond the point in time that dividends or distributions on the Category B instrument are resumed;
- impede the normal operation of the institution or any restructuring activity, including acquisitions or disposals.

A dividend stopper may also act to prohibit actions that are equivalent to the payment of a dividend, such as the insurer undertaking discretionary share buybacks.

Where an amendment or variance of a Category B instrument's terms and conditions affects its recognition as regulatory capital, such amendment or variance will only be permitted with the prior approval of the Superintendent.[17]

Insurers are permitted to "re-open" offerings of capital instruments to increase the principal amount of the original issuance provided that call options will only be exercised, with the prior approval of the Superintendent, on or after the fifth anniversary of the closing date of the latest re-opened tranche of securities.

Defeasance options may only be exercised on or after the fifth anniversary of the closing date with the prior approval of the Superintendent.

### *2.1.3. Category C capital*

[17] Any modification of, addition to, or renewal or extension of an instrument issued to a related party is subject to the legislative requirement that transactions with a related party be at terms and conditions that are at least as favourable to the institution as market terms and conditions.

- Instruments issued by the institution that meet category C criteria, but do not meet the category A or B criteria, subject to an applicable limit;
- Surplus (share premium) resulting from the issuance of instruments meeting the category C criteria.

*2.1.3.1. Qualifying criteria for inclusion of capital instruments in Category C for regulatory capital purposes*

For an instrument to be included in capital available under category C, it must meet all of the following criteria:

1. Issued and paid-in in cash or, with the prior approval of the Superintendent, in property.
2. Subordinated to policyholders and general creditors of the insurer.
3. Is neither secured nor covered by a guarantee of the issuer or related entity or other arrangement that legally or economically enhances the seniority of the claim vis-à-vis the insurer's policyholders and/or general creditors.
4. Maturity:
    a. minimum original maturity of at least five years;
    b. recognition in regulatory capital in the remaining five years before maturity will be amortized on a straight line basis;
    c. there are no step-ups[18] or other incentives to redeem.
5. May be callable at the initiative of the issuer only after a minimum of five years:
    a. To exercise a call option, an insurer must receive the prior approval of the Superintendent; and
    b. An insurer must not do anything that creates an expectation that the call will be exercised;[19] and
    c. An insurer must not exercise a call unless:
        i. It replaces the called instrument with capital of the same or better quality, including through an increase in retained earnings, and the replacement of this capital is done at conditions that are sustainable for the income capacity of the insurer;[20] or

[18] A step-up is defined as a call option combined with a pre-set increase in the initial credit spread of the instrument at a future date over the initial dividend (or distribution) rate after taking into account any swap spread between the original reference index and the new reference index. Conversion from a fixed rate to a floating rate (or vice versa) in combination with a call option without any increase in credit spread would not constitute a step-up.

[19] An option to call the instrument after five years but prior to the start of the amortisation period will not be viewed as an incentive to redeem as long as the insurer does not do anything that creates an expectation that the call will be exercised at this point.

[20] Replacement issuances can be concurrent with but not after the instrument is called.

ii. The insurer demonstrates that its capital position is well above the supervisory target capital requirements after the call option is exercised.

6. The investor must have no rights to accelerate the repayment of future scheduled payments (interest or principal), except in bankruptcy, insolvency, wind-up, or liquidation.
7. The instrument cannot have a credit sensitive dividend feature, i.e. a dividend/coupon that is reset periodically based in whole or in part on the insurer's credit standing[21].
8. Neither the insurer nor a related party over which the insurer exercises control or significant influence can have purchased the instrument, nor can the insurer directly or indirectly have funded the purchase of the instrument.
9. If the instrument is not issued directly by the insurer (e.g. it is issued out of an SPV), proceeds must be available immediately without limitation to the insurer in a form that meets or exceeds all of the criteria for inclusion specified under category C. For greater certainty, the only assets the SPV may hold are intercompany instruments issued by the institution or a related entity with terms and conditions that meet or exceed the above category C criteria. Put differently, instruments issued to the SPV have to fully meet or exceed all of the eligibility criteria under category C as if the SPV itself was an end investor – i.e. the institution cannot issue a lower capital or a senior debt instrument to an SPV and have the SPV issue higher quality capital instruments to third-party investors so as to receive recognition as qualifying capital under category C.

Category C capital instruments must not contain restrictive covenants or default clauses that would allow the holder to trigger acceleration of repayment in circumstances other than the insolvency, bankruptcy or winding-up of the issuer.

Purchase for cancellation of category C instruments is permitted at any time with the prior approval of the Superintendent. For further clarity, a purchase for cancellation does not constitute a call option as described in the above Category C criteria.

Tax and regulatory event calls are permitted during an instrument's life subject to the prior approval of the Superintendent and provided the insurer was not in a position to anticipate such an event at the time of issuance.

Where an amendment or variance of a Category C instrument's terms and conditions affects its recognition as regulatory capital, such amendment or variance will only be permitted with the prior approval of the Superintendent[22].

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[21] Insurers may use a broad index as a reference rate in which the issuing insurer is a reference entity; however, the reference rate should not exhibit significant correlation with the insurer's credit standing. If an insurer plans to issue capital instruments where the margin is linked to a broad index in which the insurer is a reference entity, the insurer should ensure that the dividend/coupon is not credit-sensitive.

[22] Any modification of, addition to, or renewal or extension of an instrument issued to a related party is subject to the legislative requirement that transactions with a related party be at terms and conditions that are at least as favourable to the institution as market terms and conditions.

Institutions are permitted to “re-open” offerings of capital instruments to increase the principal amount of the original issuance provided that call options will only be exercised, with the prior approval of the Superintendent, on or after the fifth anniversary of the closing date of the latest re-opened tranche of securities.

Defeasance options may only be exercised on or after the fifth anniversary of the closing date with the prior approval of the Superintendent.

*2.1.3.2. Amortization*

Category C capital instruments are subject to straight-line amortization in the final five years prior to maturity. Hence, as these instruments approach maturity, redemption or retraction, such outstanding balances are to be amortized based on the following schedule:

| ***Years to Maturity*** | ***Included in Capital*** |
|---|---|
| 5 years or more | 100% |
| 4 years and less than 5 years | 80% |
| 3 years and less than 4 years | 60% |
| 2 years and less than 3 years | 40% |
| 1 year and less than 2 years | 20% |
| Less than 1 year | 0% |

For instruments issued prior to January 1, 2015, where the terms of the instrument include a redemption option that is not subject to prior approval of the Superintendent and/or holders’ retraction rights, amortization should begin five years prior to the effective dates governing such options. For example, a 20-year debenture that can be redeemed at the insurer’s option at any time on or after the first 10 years would be subject to amortization commencing in year 5. Further, where a subordinated debt was redeemable at the insurer’s option at any time without the prior approval of the Superintendent, the instrument would be subject to amortization from the date of issuance. For greater certainty, this would not apply when redemption requires the Superintendent's approval as is required for all instruments issued pursuant to the above criteria in section 2.1.3.1.

Amortization should be computed at the end of each fiscal quarter based on the "years to maturity" schedule above. Thus, amortization would begin during the first quarter that ends within five calendar years to maturity. For example, if an instrument matures on October 15, 2020, 20% amortization of the issue would occur on October 16, 2015 and be reflected in the December 31, 2015 regulatory return. An additional 20% amortization would be reflected in each subsequent December 31 return.

### *2.1.4. Non-controlling interests*

Insurers are permitted to include, in capital available, non-controlling interests in operating consolidated subsidiaries, provided:

i. the capital instruments meet the qualifying criteria under category A, B and C;

ii. the capital in the subsidiary is not excessive in relation to the amount necessary to carry on the subsidiary's business; and

iii. the level of capitalization of the subsidiary is comparable to that of the insurance company as a whole.

If a subsidiary issues capital instruments for the funding of the insurer, or that are substantially in excess of its own requirements, the terms and conditions of the issue, as well as the intercompany transfer, must ensure that investors are placed in the same position as if the instrument were issued by the insurer directly in order for it to qualify as capital available upon consolidation. This can only be achieved by the subsidiary using the proceeds of the issue to purchase a similar instrument from the parent. Since subsidiaries cannot buy shares of the parent P&C insurance company, it is likely that this treatment will only be applicable to the subordinated debt. In addition, to qualify as capital for the consolidated entity, the debt held by third parties cannot effectively be secured by other assets, such as cash, held by the subsidiary.

## 2.2. Capital Composition Limits

The inclusion of capital instruments qualifying under category B and category C criteria is subject to the following limits:

- The sum of capital instruments meeting the qualifying criteria under category B and category C will not exceed 40% of total capital available, excluding accumulated other comprehensive income;
- Capital instruments meeting the qualifying criteria under category C will not exceed 7% of total capital available, excluding accumulated other comprehensive income.

Category B and category C capital exceeding the allowable limits will be subject to the following treatment for regulatory capital purposes:

- In cases where capital instruments qualifying under one of either category B or C exceed the limits, the capital in excess of the limits will not be considered in the calculation of capital available. In cases where capital instruments both under category B and category C are in excess of the prescribed limits, the greater value of the two excess amounts will be excluded from capital available. In doing so, insurers must first fully exclude excess capital under category C, followed by excess capital under category B.
- Under certain exceptional circumstances and subject to OSFI's supervisory approval, a company may be permitted to continue to include such excess amounts in capital available temporarily, upon providing OSFI with a satisfactory plan outlining the company's strategy to achieve compliance with the limits as soon as possible. Typically, only those excesses arising after issuance and as a result of operating losses or extraordinary events beyond the control of management will normally be eligible for temporary inclusion in capital available. In most other circumstances, for example, excesses resulting from:

    1) purchases or redemptions of capital instruments;

2) discretionary dividend payments;

3) new issuances of non-common capital instruments within the same fiscal quarter; or

4) foreseeable events;

would generally not qualify for inclusion in capital available.

## 2.3. Regulatory Adjustments to Capital Available

### *2.3.1. Deductions:*

1. Interests in and loans or other forms of lending provided to non-qualifying subsidiaries, associates, and joint ventures in which the company holds more than a 10% ownership interest:
   - Interests in non-qualifying subsidiaries, associates, and joint ventures in which the company holds more than a 10% ownership interest must be deducted from capital available (reference section 2.4);
   - Loans or other forms of lending provided to non-qualifying subsidiaries, associates, and joint ventures in which the company holds more than a 10% ownership interest that are reported as equity on their financial statements must be deducted from capital available (reference section 2.4).
2. Unsecured unregistered reinsurance exposures and self-insured retentions:
   - Amounts receivable and recoverable from an unregistered reinsurer to the extent that they are not covered by amounts payable to the same assuming reinsurer or acceptable collateral (reference section 4.3) must be deducted from capital available;
   - Self-insured retentions, included in other recoverables on liability for incurred claims, where OSFI requires acceptable collateral to ensure collectability of recoverables, and no collateral has been received (reference section 4.4) must be deducted from capital available.
3. The earthquake premium reserve (EPR) not used as part of financial resources to cover earthquake risk exposure (reference section 4.5).
4. Insurance acquisition cash flows:
   - Any asset for insurance acquisition cash flows must be deducted from capital available.
   - Unamortized insurance acquisition cash flows associated with accident and sickness (A&S) business, other than those arising from commissions and premium taxes.[23]

[23] The methodology for calculating insurance risk margin for A&S business will be revised at a future date. The current methodology where risk factors are applied to insurance revenue necessitates a full deduction from capital of unamortized insurance acquisition cash flows – other, and a capital requirement for unamortized insurance acquisition cash flows – commissions (reference section 4.6).

5. Accumulated other comprehensive income on cash flow hedges:

   The amount of cash flow hedge reserve that relates to the hedging of items that are not fair valued on the balance sheet (including projected cash flows) must be derecognized in the calculation of capital available. This includes items that are not recognized on the balance sheet but excludes items that are fair valued on the balance sheet. Positive amounts should be deducted from capital available and negative amounts should be added back. This treatment specifically identifies the element of the cash flow hedge reserve that is to be derecognized for prudential purposes. It removes the element that gives rise to artificial volatility in capital available, as in this case the reserve only reflects one half of the picture (the fair value of the derivative, but not the changes in fair value of the hedged future cash flow).

6. Goodwill and other intangible assets:

   - Goodwill related to consolidated subsidiaries and subsidiaries deconsolidated for regulatory capital purposes and the proportional share of goodwill in joint ventures subject to the equity method accounting must be deducted from capital available. The amount reported on the balance sheet is to be deducted net of any associated deferred tax liability that would be extinguished if the goodwill becomes impaired or derecognized under relevant accounting standards.
   - All other intangible assets[24] must be deducted from capital available. This includes intangible assets related to consolidated subsidiaries and subsidiaries deconsolidated for regulatory capital purposes, and the proportional share of intangible assets in joint ventures subject to the equity method of accounting. The full amount is to be deducted net of any associated deferred tax liability that would be extinguished if the intangible assets become impaired or derecognized under relevant accounting standards.

7. Deferred tax assets:

   Deferred tax assets (DTAs), except for those eligible for the 10% risk factor, must be deducted from capital available. In addition, the amount of DTAs that is in excess of the amount that could be recoverable from income taxes paid in the three immediate preceding years is deducted from capital available. Deferred tax assets may be netted with associated deferred tax liabilities (DTLs) only if the DTAs and DTLs relate to taxes levied by the same taxation authority and offsetting is permitted by the relevant taxation authority[25]. The DTLs permitted to be netted against DTAs must exclude amounts that have been netted against the deduction of goodwill, intangibles and defined benefit pension plan assets, and must be allocated on a pro rata basis between DTAs that are to be deducted in full and DTAs that are subject to the 10% risk factor (reference section 6.1).

8. Cumulative gains and losses due to changes in own credit risk on fair valued financial liabilities:

[24] This includes computer software intangibles.
[25] This does not permit offsetting of DTAs across provinces.

All accumulated after-tax unrealized gains and losses that have resulted from changes in the fair value of insurer's financial liabilities that are due to changes in the institution's own credit risk must be deducted from capital available. In addition, with regard to derivative liabilities, all accounting valuation adjustments arising from the institution's own credit risk should also be deducted on an after-tax basis. The offsetting between valuation adjustments arising from the institution's own credit risk and those arising from its counterparties' credit risk is not permitted.

9. Defined benefit pension fund assets and liabilities:

For each defined benefit pension fund that is in a surplus position and reported as an asset on the institution's balance sheet, the amounts reported as a surplus asset on the balance sheet must be deducted from capital available, net of any associated deferred tax liability that would be extinguished if the asset becomes impaired or derecognized under the relevant accounting standards, and net of any amount of available refunds of defined benefit pension fund surplus assets to which the insurer has unrestricted and unfettered access. Insurers may only reduce this deduction by an amount of available refunds of defined benefit pension plan surplus assets if they obtain a prior written supervisory approval from OSFI [26].

10. Investments in own instruments (treasury stock):

All of institution's investments in its own instruments, whether held directly or indirectly, must be deducted from capital available (unless already derecognized under IFRS). In addition, any own stock that the institution could be contractually obliged to purchase should be deducted from capital available.

11. Reciprocal cross holdings in the common shares of insurance, banking and financial entities:

Reciprocal cross holdings in common shares (e.g. Insurer A holds shares of Insurer B and Insurer B in return holds shares of Insurer A), also known as back-to-back placements, that are designed to artificially inflate the capital position of institutions must be fully deducted from capital available.

Items that are deducted from capital available will be subject to a 0% risk factor for capital required purposes.

### *2.3.2. Additions:*

1. Contractual service margin (CSM) associated with title insurance contracts:

The amount of CSM for the class of title insurance contracts is added to the insurer's capital available.

[26] To obtain OSFI supervisory approval, an insurer must demonstrate, to OSFI's satisfaction, that it has clear entitlement to the surplus and that it has unrestricted and unfettered access to the surplus pension assets. Evidence required by OSFI may include, among other things, an acceptable independent legal opinion and the prior authorization from the pension plan members and the pension regulator.

### *2.3.3. Adjustments:*

Adjustments to owner-occupied property valuations[27]:

- For owner-occupied property accounted for using the cost model and where the deemed value of the property was determined at conversion to the International Financial Reporting Standards (IFRS) by using fair value, unrealized after tax fair value gains (losses) must be reversed from the institution's reported retained earnings for capital adequacy purposes. The amount determined at conversion is an on-going deduction from capital available and can only be changed as a result of a sale of owner-occupied properties (owned at the time of IFRS conversion) and the resulting realization of actual gains (losses); and
- Accumulated net after tax revaluation losses in excess of gains accounted for using the revaluation model must be reversed from retained earnings. Net after tax revaluation gains must be reversed from accumulated other comprehensive income included in capital available.

## 2.4. Capital Treatment of Interests in and Loans to Subsidiaries, Associates and Joint Ventures

The equity method of accounting is used for all interests in non-qualifying subsidiaries, associates and joint ventures[28]. These interests remain unconsolidated for MCT purposes.

### *2.4.1. Consolidated subsidiaries (e.g. property and casualty insurance and ancillary businesses such as agencies, brokerages and mutual funds)*

The financial statements of the subsidiaries are fully consolidated and the net value is included in the parent's capital available. The assets and liabilities of these subsidiaries are therefore subject to risk factors and liability margins in the parent's MCT.

### *2.4.2. Non-qualifying subsidiaries*

Interests in non-qualifying subsidiaries are excluded from capital available. Loans or other forms of lending provided to a non-qualifying subsidiary, if they are reported as equity on the financial statements of the non-qualifying subsidiary, are also excluded from capital available of the insurer. Loans or other forms of lending provided to a non-qualifying subsidiary that are **not** reported as equity are subject to a risk factor of 45%. Receivables from non-qualifying subsidiaries will attract a risk factor of 5% or 10% depending on how long the balances are outstanding (reference section 6.1).

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[27] No adjustments are required for "investment properties" as fair value gains (losses) are allowed for capital purposes.

[28] Interests in limited partnerships that are reported using the equity method of accounting are subject to the same capital treatment as joint ventures.

### *2.4.3. Associates*

An enterprise is an associate of another enterprise if:

- both are subsidiaries of the same enterprise; or
- each of them represents an investment by the same person or enterprise, in which the investor holds 20% or more of the voting power in each investment; or
- one enterprise exerts significant influence over the other. The notion of significant influence is defined in accordance with IFRS; or
- if an insurance broker is economically dependent on the insurer, then the broker must be treated as an associate of the insurer for capital purposes.

Interests in associates are excluded from capital available. Loans or other forms of lending provided to associates, if they are reported as equity in the financial statements of the associates, are also excluded from capital available of the insurer. Loans or other forms of lending provided to associates that are **not** reported as equity are subject to a risk factor of 45%. Insurance receivables from associates that are registered reinsurers will attract a risk factor of 0.7%. Other receivables from associates will be subject to risk factors of 5% or 10% depending on how long the balances are outstanding (reference section 6.1).

### *2.4.4. Joint ventures in which a company holds less than or equal to 10% ownership interest*

Where an insurer holds less than or equal to 10% ownership in a joint venture, the investment is included in capital available. The investment is reported under capital required for equity risk, and is subject to the risk factor applicable to investments in common shares (reference section 5.3).

### *2.4.5. Joint ventures in which a company holds more than a 10% ownership interest*

Interests in joint ventures with more than 10% ownership are excluded from capital available. Loans or other forms of lending provided to a joint venture with more than a 10% ownership interest, if they are reported as equity on the financial statements of the joint venture with more than a 10% ownership interest, are also excluded from capital available of the insurer. Loans or other forms of lending provided to a joint venture with more than a 10% ownership interest that are **not** reported as equity are subject to a risk factor of 45%. Receivables from joint ventures with more than a 10% ownership interest will attract a risk factor of 5% or 10% depending on how long the balances are outstanding (reference section 6.1).

### *2.4.6. Ownership interests in an intra-group investment arrangement*

Where companies participate in an intra-group investment arrangement, and the arrangement has been approved by OSFI pursuant to the requirements of the ICA, companies are not required to deduct from capital available their ownership interest. A “look-through” approach should be used for intra-group investments, similar to that for mutual funds (reference section 6.1).

### *2.4.7 Summary of exposures*

Types of exposures an insurer might have with non-qualifying subsidiaries, associates, and joint ventures:

| Exposure | Capital treatment |
|---|---|
| Common or preferred shares (non-qualifying subsidiaries and associates) including share of accumulated earnings/losses less dividends received based on equity accounting | Excluded from capital available |
| Ownership interests > 10% joint venture | Excluded from capital available |
| Ownership interests ≤ 10% joint venture | Included in capital available with a risk factor of 30% applied to the ownership interest |
| Loans or other forms of lending (bonds, debentures, mortgages, etc.) reported as equity | Excluded from capital available |
| Loans or other forms of lending (bonds, debentures, mortgages, etc.) **not** reported as equity | Included in capital available with a risk factor of 45% |
| Insurance receivables from associates that are registered reinsurers | Included in capital available with a risk factor of 0.7% |
| Receivables from associates that are registered reinsurers | Included in capital available with a risk factor of 5% or 10% depending on how long the balances are outstanding |
| Receivables from other associates, non-qualifying subsidiaries and joint ventures | Included in capital available with a risk factor of 5% or 10% depending on how long the balances are outstanding |

### *Appendix 2-A: Information Requirements for Capital Confirmations*

Given the potential impact of the disqualification of a capital instrument, insurers are encouraged to seek confirmations of capital quality from OSFI prior to issuing instruments[29]. In conjunction with such requests, the insurer is expected to provide the following information to the Capital Division:

1. An indicative term sheet specifying indicative dates, rates and amounts and summarizing key provisions in respect of all proposed instruments.
2. The draft and final terms and conditions of the proposed instrument supported by relevant documents (i.e. Prospectus, Offering Memorandum, Debt Agreement, Share Terms, etc.).
3. A copy of the institution's current by-laws or other constating documents relevant to the capital to be issued as well as any material agreements, including shareholders' agreements, which may affect the capital quality of the instrument.
4. Where applicable, for all debt instruments only:
    a) the draft and final Trust Indenture and supplemental indentures; and
    b) the terms of any guarantee relating to the instrument.
5. Where the terms of the instrument include a redemption option or similar feature upon a tax event, an external tax opinion confirming the availability of such deduction in respect of interest or distributions payable on the instrument for income tax purposes[30].
6. An accounting opinion describing the proposed treatment and disclosure of the capital instrument (other than common shares) on the institution's financial statements[31].
7. Where the initial interest or coupon rate payable on the instrument resets periodically or the basis of the interest rate changes from fixed to floating (or vice versa) at a pre-determined future date, calculations demonstrating that no incentive to redeem, or step-up, will arise upon the change in the initial rate. Where applicable, a step-up calculation should be provided according to the swap-spread methodology, which confirms there is no step-up upon the change in interest rate, and supported by screenshots of the applicable reference index rate(s).
8. Capital projections demonstrating that the insurer will be in compliance with its supervisory target capital ratios as well as the capital composition requirements specified in section 2.2 at the end of the quarter in which the instrument is expected to be issued.
9. An assessment of the features of the proposed capital instrument against the qualifying criteria for category B capital instruments or category C capital instruments, as applicable, as

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[29] If an insurer fails to obtain a capital confirmation (or obtains a capital confirmation without disclosing all relevant material facts to OSFI), OSFI may, at its discretion and at any time, determine that such capital does not comply with these principles and is to be excluded from the insurer's capital available.

[30] OSFI reserves the right to require a Canada Revenue Agency advance tax ruling to confirm such tax opinion if the tax consequences are subject to material uncertainty.

[31] OSFI reserves the right to require such accounting opinion to be an external opinion of a firm acceptable to OSFI if the accounting consequences are subject to material uncertainty.

specified in the MCT Guideline. For greater certainty, this assessment would only be required for an initial issuance or precedent and is not required for subsequent issuances provided the terms of the instrument are not materially altered.

10. A written attestation from a senior officer of the institution confirming that the insurer has not provided financing to any person for the express purpose of investing in the proposed capital instrument.

# Chapter 3. Foreign Companies Operating in Canada on a Branch Basis

Under subsection 608(1) of the ICA, a foreign company is required to maintain in Canada an adequate margin of assets over liabilities in respect of its insurance business in Canada. The Branch Adequacy of Assets Test (BAAT) provides the framework within which the Superintendent assesses whether foreign companies maintain an adequate margin pursuant to subsection 608(1).

All provisions in this guideline apply to branches unless stated otherwise in this chapter.

Notwithstanding the stated requirements, in any case where the Superintendent believes that the capital treatment is inappropriate, a specific additional capital requirement will be determined.

## 3.1. Branch Adequacy of Assets Test

The BAAT ratio measures the adequacy of net assets available to meet the margin requirements as determined in accordance with this guideline. The BAAT ratio is defined as the net assets available divided by the minimum margin required, expressed as a percentage. The determination of the net assets available and the minimum margin required is described below.

### *3.1.1 Net assets available*

For BAAT purposes, net assets available are calculated as follows, subject to regulatory adjustments:

***Total vested assets***

*Less:*

***Total net liabilities,*** which are equal to total liabilities, net of:

- Insurance contract assets
- Reinsurance contracts held assets associated with registered reinsurers;
- Reinsurance contracts held assets associated with unregistered reinsurers;
- Other allowable recoverables on liability for incurred claims, including salvage and subrogation;
- Self-insured retention recoverables to the extent permitted by OSFI (reference section 4.4);
- Contractual service margin (CSM) associated with title insurance contracts;
- Contractual service margin (CSM) associated with business combinations and portfolio transfers prior to June 30, 2019;
- Residual interest, reported as a liability, of owner-policyholders of mutual entities

### *3.1.2 Regulatory adjustments to net assets available:*

Additions:

1. Balance sheet values of right-of-use assets associated with owner-occupied leased properties, as recognised on the branch's balance sheet in accordance with relevant accounting standards.
2. Accumulated net after tax revaluation losses in excess of gains on owner-occupied properties that are reflected in the head office account for accounting purposes.
3. Amounts due from federally regulated insurers and approved reinsurers that can be legally netted against the insurance contract liabilities of the branch and that meet the following conditions:
    - The amount due does not exceed the liability owed to the insurer (i.e. any excess of receivables over liabilities is excluded).
    - The branch has executed a written, bilateral netting contract or agreement with the insurer to which the liability is owed that creates a single legal obligation. The result of such an arrangement must be that the branch has only one obligation for payment or one claim to receive funds based on the net sum of the liabilities and amounts due in the event the counterparty to the agreement failed to perform due to default, bankruptcy, liquidation or similar circumstances.
    - The netting arrangement specifies that only the liabilities to the counterparty arising out of the Canadian operations of the foreign company may be taken into consideration in determining the net amount owed. In particular, the counterparty must not be able to net amounts due to the branch against any liabilities of the home office or affiliates of the branch that are not liabilities arising out of the Canadian operations of the foreign company.
    - The branch must have written and reasoned legal opinions confirming that, in the event of any legal challenge, the relevant courts or administrative authorities will find the amount owed under the netting agreement to be the net amount under the laws of all relevant jurisdictions. In reaching this conclusion, legal opinions must address the validity and enforceability of the entire netting agreement under its terms.
        - The laws of "all relevant jurisdictions" are: a) the law of the jurisdiction where the counterparty is incorporated and, if the foreign branch of a counterparty is involved, the laws of the jurisdiction in which the branch is located; b) the law governing the individual insurance transaction; and c) the law governing any contracts or agreements required to effect the netting arrangement. The legal opinions must be generally recognized as such by the legal community in Canada or by a memorandum of law that addresses all relevant issues in a reasoned manner.

- The branch must have procedures in place to update legal opinions as necessary to ensure continuing enforceability of the netting arrangement in light of possible changes in relevant law.
- The netting contract/agreements terms and conditions and the quality and content of the legal opinions must meet the conditions of this guideline and be submitted to OSFI for review prior to the branch including the receivables in its net assets available.

Deductions:

1. Amounts recoverable from unregistered reinsurers to the extent that they are not covered by acceptable collateral held as security from assuming reinsurers (reference section 4.3).
2. Unrealized fair value gains (losses) on owner-occupied properties reflected in the head office account at conversion to IFRS.
3. Accumulated net after tax revaluation gains on owner-occupied properties that are reflected in the accumulated other comprehensive income for accounting purposes.
4. Cash flows in from other insurers and subsidiaries, associates & joint ventures, including cash flows in from reinsurance contracts held that do not meet the criteria in (3) of the additions above, that are included in the determination of liabilities.
5. Cash flows associated with accident and sickness (A&S) business (reference section 4.6), equal to:
    - 45% of unamortized insurance acquisition commission cash flows;
    - 100% of unamortized insurance acquisition cash flows other than those arising from commissions and premium taxes.

### *3.1.3 Margin required*

Margin required is calculated with respect to the branch's liabilities, vested assets and other assets available. The BAAT minimum margin required is the sum of the following risk margins, less the diversification credit, divided by 1.5:

*Sum of margin required for:*

i) Insurance risk (reference chapter 4):
    a. Liability for incurred claims and unexpired coverage;
    b. Reinsurance held with unregistered insurers;
    c. Earthquake and nuclear catastrophe reserves.

ii) Market risk (reference chapter 5):
    a. Interest rate;
    b. Foreign exchange;
    c. Equity;

d. Real estate;

e. Right-of-use assets;

f. Other market exposures.

iii) Credit risk (reference chapter 6):

a. Counterparty default for balance sheet assets;

b. Counterparty default for off-balance sheet exposures;

c. Collateral held for unregistered reinsurance and self-insured retention (reference section 4.3.3).

iv) Operational risk (reference chapter 7).

*Less:*

v) Diversification credit (reference chapter 8).

*Divided by 1.5.*

# Chapter 4. Insurance Risk

Insurance risk is the risk arising from the potential for claims or payouts to be made to policyholders or beneficiaries. Exposure to this risk results from the present value of losses being higher than the amounts originally estimated.

Insurance risk includes uncertainties around:

a) the ultimate amount of net cash flows from premiums, commissions, claims, and related settlement expenses, and

b) the timing of the receipt and payment of these cash flows.

The insurance risk component reflects the insurer's consolidated risk profile by individual classes of insurance and results in specific margin requirements for insurance risk. For the MCT, the risk associated with insurance exposure is divided into four parts:

i.) liability for incurred claims (i.e. reserving risk associated with variation in claims provisions);

ii.) unexpired coverage (i.e. underwriting risk including catastrophe risk, other than earthquakes and nuclear);

iii.) unregistered reinsurance; and

iv.) earthquake and nuclear catastrophes.

## 4.1. Diversification Credit within Insurance Risk

The risk factors for each class of insurance contain an implicit diversification credit based on the assumption that insurers have a well-diversified portfolio of risks for a given portfolio of business.

## 4.2. Margins for Liability for Incurred Claims and Unexpired Coverage

Given the uncertainty that insurance contract liabilities will be sufficient to cover future claims, margins are added to cover a potential shortfall.

### *4.2.1. Margin for liability for incurred claims*

The margin for liability for incurred claims is calculated by class of insurance, by multiplying the liability for incurred claims for insurance contracts issued (net of salvage and subrogation), excluding the associated risk adjustment for non-financial risk, less the asset for incurred claims for reinsurance contracts held excluding the assocated risk adjustment for non-financial risk, by the applicable risk factors.

$$\begin{gathered} Margin\ for\ liability\ for\ incurred\ claims = risk\ factor\ \times \\ (liability\ for\ incurred\ claims\ for\ insurance\ contracts\ issued \\ excluding\ the\ associated\ risk\ adjustment\ for\ non\ financial\ risk, \\ less\ the\ asset\ for\ incurred\ claims\ for\ reinsurance\ contracts\ held\ excluding \\ the\ associated\ risk\ adjustment\ for\ non\ financial\ risk) \end{gathered}$$

The applicable insurance risk factors for determining the margins for liability for incurred claims are as follows:

| Class of Insurance | Risk Factor<br>Net Liability for Incurred Claims |
|---|---|
| Personal property | 15% |
| Commercial Property | 10% |
| Aircraft | 20% |
| Auto – Liability | 10% |
| Auto – Personal Accident | 10% |
| Auto – Other | 15% |
| Boiler & Machinery | 15% |
| Credit | 20% |
| Credit Protection | 20% |
| Fidelity | 20% |
| Hail | 20% |
| Legal Expense | 25% |
| Liability | 25% |
| Other Approved Products | 20% |
| Surety | 20% |
| Title | 15% |
| Marine | 20% |
| Warranty | Use same risk factors as the underlying class of insurance |
| Accident & Sickness | Refer to section 4.6 |

### *4.2.2. Margin for unexpired coverage*

The margin for unexpired coverage is calculated by class of insurance, by multiplying the greater of:

- net unexpired coverage; and
- 30% of net premiums received (i.e., premiums received net of associated reinsurance premiums paid) in the past 12 months

by the applicable risk factors.

The net unexpired coverage is determined as:

$$\begin{aligned} &Net\ unexpired\ coverage \\ &\qquad = Unexpired\ coverage\ for\ insurance\ contracts\ issued \\ &\qquad - Unexpired\ coverage\ for\ reinsurance\ contracts\ held \end{aligned}$$

#### *4.2.2.1. Unexpired coverage for insurance contracts issued*

The unexpired coverage for insurance contracts issued is determined using one of two methods depending on whether the group of insurance contracts issued is measured applying the general measurement model (GMM) or the premium allocation approach (PAA) to determine the liability for remaining coverage (LRC).

1. For groups of insurance contracts issued measured using the GMM to determine the LRC:

$$Unexpired\ coverage\ for\ insurance\ contracts\ issued\ (GMM) = estimate\ of\ future\ cash\ flows\ for\ insurance\ contracts\ issued\ (excluding\ premium\ cash\ flows), adjusted\ for\ the\ time\ value\ of\ money^{32}$$

   The estimate of future cash flows includes expenses directly attributable to fulfilling insurance contracts, but it would not include the risk adjustment for non-financial risk.

2. For groups of insurance contracts issued that are measured using the PAA to determine the LRC:

$$Unexpired\ coverage\ for\ insurance\ contracts\ issued\ (PAA) = \big(liability\ for\ remaining\ coverage, excluding\ the\ loss\ component + unamortized\ insurance\ acquisition\ cash\ flows^{33} + premiums\ receivable^{34}\big) \times ELR + costs$$

   The costs in unexpired coverage for insurance contracts issued (PAA) are expenses directly attributable to fulfilling insurance contracts. These costs can be implicit in the expected loss ratio (ELR), explicitly added, or a combination of implicit and explicit. Unexpired coverage for insurance contracts issued (PAA) exclude any risk adjustment for non-financial risk and may be adjusted for the time value of money.

#### *4.2.2.2. Unexpired coverage for reinsurance contracts held*

The unexpired coverage for reinsurance contracts held is determined using one of two methods depending on whether the group of reinsurance contracts held is measured applying the GMM or PAA to determine the asset for remaining coverage (ARC).

1. For groups of reinsurance contracts held that are measured using the GMM to determine the ARC:

[32] Reference to IFRS 17 paragraphs 33-36.
[33] If the insurer chooses to expense its insurance acquisition cash flows, per IFRS 17 paragraph 59 (a), the remaining amount of unamortized insurance acquisition cash flows will be zero.
[34] Premiums receivable represents the premium amounts to be received (whether outstanding or not yet due) including instalment premiums.

$$\begin{aligned}&Unexpired\ coverage\ for\ reinsurance\ contracts\ held\ (GMM)\\&= (estimate\ of\ future\ cash\ flows\ for\ reinsurance\ contracts\ held\\&+ estimate\ of\ future\ cash\ flows\ for\ future\ reinsurance\ contracts\ held),\\&\qquad adjusted\ for\ time\ value\ of\ money\end{aligned}$$

The estimate of future cash flows does not include the risk adjustment for non-financial risk. Estimate of future cash flows for future reinsurance contracts held refers to the portion of future reinsurance contracts held that covers the unexpired portion of insurance contracts issued. These cash flows include expected losses recoverable, net of expected future reinsurance costs.

**Illustrative example:**
An insurance contract written October 1 would have reinsurance coverage for 3 months under an existing January to December reinsurance contract. The remaining 9 months of the insurance contract issued would be covered under a future reinsurance contract held.

2. For groups of reinsurance contracts held that are measured using the PAA to determine the ARC:

$$\begin{aligned}&Unexpired\ coverage\ for\ reinsurance\ contracts\ held\ (PAA)\\&= \big[(asset\ for\ remaining\ coverage\ excluding\ loss\ recovery\ component\\&+ unamortized\ reinsurance\ commission^{35})\\&+ premiums\ payable\ to\ the\ assuming\ insurer^{36}\\&+ expected\ future\ reinsurance\ premiums\big] \times ELR^{37}\\&- expected\ future\ reinsurance\ premiums\ net\ of\ reinsurance\ commissions\end{aligned}$$

Unamortized reinsurance commission is equal to the amount used for the measurement of the asset for remaining coverage (ARC), and includes ceding commissions that are received and receivable, and yet to be amortized. Unexpired coverage for reinsurance contracts held (PAA) excludes any risk adjustment for non-financial risk and may be adjusted for the time value of money.

The applicable insurance risk factors for determining the margins for unexpired coverage are as follows:

[35] The unamortized reinsurance commission related to the unexpired portion of the reinsured insurance contracts issued. It is not contingent on claims of the underlying contracts and generally includes a total provision for broker/agent commissions, premium taxes, and other acquisition and servicing expenses.
[36] Premiums payable represents the premium amounts to be paid (whether outstanding or not yet due)
[37] The ELR for the unexpired coverage for reinsurance contracts held (PAA) in section 4.2.2.2 is the ELR for the ceded calculations, and is not necessarily the same as the ELR for the gross calculations in section 4.2.2.1 for the unexpired coverage for insurance contract issued (PAA).

| Class of Insurance | Risk Factor<br>Net Unexpired Coverage |
|---|---|
| Personal property | 20% |
| Commercial Property | 20% |
| Aircraft | 25% |
| Auto – Liability | 15% |
| Auto – Personal Accident | 15% |
| Auto – Other | 20% |
| Boiler & Machinery | 20% |
| Credit | 25% |
| Credit Protection | 25% |
| Fidelity | 25% |
| Hail | 25% |
| Legal Expense | 30% |
| Liability | 30% |
| Other Approved Products | 25% |
| Surety | 25% |
| Title | 20% |
| Marine | 25% |
| Warranty | Use same risk factors as the underlying class of insurance |
| Accident & Sickness | Refer to section 4.6 |

### *4.2.3. Risk factors for warranty business*

The risk factors to be used for home and product warranty should be the same as those applied for personal property. The risk factors to be used for equipment warranty should be the same as the risk factors applied for boiler and machinery.

## 4.3. Risk Mitigation and Risk Transfer - Reinsurance

### *4.3.1. General*

The terms registered and unregistered, as defined below, are relevant in determining whether credit can be taken for reinsurance placed by insurers. In order for an insurer to obtain credit for reinsurance on account of any reinsurance arrangement with a registered or unregistered reinsurer, the reinsurance arrangement must comply with the requirements of Guideline B-3 *Sound Reinsurance Practices and Procedures*.

### *4.3.2. Registered reinsurers*

#### *4.3.2.1 Definition of registered reinsurer*

A reinsurer is generally considered to be a registered reinsurer if it is:

(a) a reinsurer that is either:

  i. incorporated federally and has reinsured the risks of the ceding company, or

  ii. a foreign company that has reinsured in Canada the risks of the ceding company, and is authorized by order of the Superintendent to do so;

(b) a provincially/territorially regulated insurer that has been approved by the Superintendent;

(c) the Insurance Corporation of British Columbia;

(d) the Manitoba Public Insurance Corporation;

(e) Saskatchewan Government Insurance;

(f) Export Development Canada;

(g) Provincial Risk Sharing Pools administered by The Facility Association; or

(h) Quebec Risk Sharing Plan administered by the Groupement des assureurs automobiles.

Subsection 578(5) of the ICA requires a foreign company, in respect of risks it reinsures in Canada, to set out in all premium notices, applications for policies and policies (which may include cover notes, offer letters or quotations) a statement that the document was issued or made in the course of its insurance business in Canada. In cases where the cover note, offer letter or quotation can be considered neither an application for a policy nor a policy, an insurer will be permitted to treat a reinsurance arrangement as registered reinsurance only if the foreign reinsurer includes, in the cover note, offer letter or quotation, a statement that the foreign reinsurer intends to issue the policy under negotiation in the course of its insurance business in Canada, and that it will take measures to ensure that the cedant's risks will be reinsured in Canada in accordance with OSFI's advisory No. 2007-01-R1 entitled *Insurance in Canada of Risks*.

With respect to a Canadian company's reinsurance of out-of-Canada business only, reinsurers regulated in an OECD country may be recognized as "registered" on the basis of financial soundness, provided that the reinsurance contracts are recognized by the regulatory agencies of the countries in question. OSFI retains the authority to disqualify such reinsurance if not satisfied with the financial condition of the reinsuring company.

All out-of-Canada business ceded to reinsurers not satisfying the recognized "registered" definition in the previous paragraph must follow the requirements of section 4.3.3 and must be reported in the exhibit *Reinsurance Ceded to Unregistered Insurers* (the unregistered reinsurance exhibit) of the MCT Return.

#### *4.3.2.2 Risk factors*

The risk of uncollectability of recoverables from reinsurers arises from the risk that the reinsurer will fail to pay the insurer what it is owed. There is additional risk associated with mis-assessing the amount of the required provision. The risk factor applied to the premiums associated with unexpired coverage on reinsurance contracts held from registered reinsurers[38] and the asset for incurred claims recoverable from registered reinsurers is treated as a combined weight under the MCT (reference section 6.1). Insurance receivables and amounts recoverable from intra-group pooling arrangements approved by OSFI are exempt from the application of the risk factors.

The balance sheet value used to calculate the credit risk requirement for the amounts of premiums associated with unexpired coverage on reinsurance contracts held and the asset for incurred claims recoverable from the assuming insurer arising from registered reinsurance may be reduced by:

1. the liability for funds held by the ceding insurer for exclusive benefit of the ceding insurer (e.g. funds withheld reinsurance) to secure the payment to the ceding insurer by the reinsurer of the reinsurer's share of any loss or liability for which the reinsurer is liable under the reinsurance contract; and
2. any other liabilities of the ceding insurer due to the reinsurer for which the ceding insurer has a legal and contractual right of setoff against the amount recoverable from the reinsurer.

Total reinsurance contract assets by reinsurer cannot be negative. Acceptable collateral posted by the reinsurers under registered reinsurance contracts may be recognized provided the conditions under section 4.3.3.4 are met.

### ***4.3.3. Unregistered reinsurers***

#### *4.3.3.1. Definition of unregistered reinsurer*

A reinsurer is generally considered to be unregistered if it is not a registered reinsurer as defined in section 4.3.2.1.

A ceding insurer is given credit for unregistered reinsurance where the ceding insurer obtains and maintains a valid and enforceable security interest that has priority over any other security interest in assets of an unregistered reinsurer that are held in Canada in accordance with OSFI's *Guidance for Reinsurance Security Agreements (RSA)*. A ceding insurer is also given credit for the amount of acceptable letters of credit held to secure the payment to the ceding insurer by the reinsurer of the reinsurer's share of any loss or liability for which the reinsurer is liable under the reinsurance contract. Insurers should refer to *General Guidelines for Use of Letters of Credit* available on OSFI's website.

[38] The definition of unexpired coverage on reinsurance contracts held, is defined in part (A) of section 4.3.3.2.

### *4.3.3.2. Deduction from capital available*

Amounts receivable and recoverable from an unregistered reinsurer, as reported for regulatory purposes, are deducted from capital available to the extent that they are not covered by amounts payable to the assuming reinsurer or acceptable collateral. Acceptable collateral is defined as non-owned deposits under a RSA, other acceptable non-owned deposits, funds held to secure payment from an assuming reinsurer, and letters of credit held as security from an assuming reinsurer. Section 4.3.3.4 outlines further conditions for using collateral to obtain credit for unregistered reinsurance. Amounts payable to an assuming reinsurer may be deducted from amounts receivable and recoverable only where there is a legal and contractual right of setoff.

The deduction from capital available for receivables and recoverables from an unregistered reinsurer is calculated in the unregistered reinsurance exhibit of the MCT Return.

In respect of each unregistered reinsurer to which an insurer has ceded business, a deduction from capital available is required if the following calculation is positive:

$$A+B+C+D-E-F-G-H-I$$

Where:

(A) is the amount of premiums associated with unexpired coverage on reinsurance contracts held.

Premiums associated with unexpired coverage on reinsurance contracts held are determined using one of two methods depending on whether an insurer uses the GMM or PAA to measure the ARC for a group of reinsurance contracts held.

1. For P&C insurers using the PAA to measure a group of reinsurance contracts held, the premiums associated with unexpired coverage on reinsurance contracts held is determined as:

$$\begin{aligned} &Asset\ for\ remaining\ coverage\ on\ reinsurance\ contracts\ held \\ &\quad + unamortized\ reinsurance\ commission^{39} \\ &\quad + premiums\ payable\ to\ the\ assuming\ insurer \end{aligned}$$

2. For P&C insurers using the GMM to measure a group of reinsurance contracts held, the premiums associated with the unexpired coverage on reinsurance contracts held is determined as:

   a) If the contractual service margin (CSM) of a group of reinsurance contracts held represents a net cost of purchasing reinsurance[40]:

[39] Unamortized reinsurance commission is equal to the amount used for the measurement of the ARC, and includes ceding commissions that are received and receivable, and yet to be amortized.

[40] A group of reinsurance contracts representing a net cost may include the aggregate of groups of contracts within a portfolio that have not been included in the group of contracts with a net gain for accounting purposes (i.e. the groups with no significant possibility of a net gain and remaining contracts).

$$Expected\ cash\ inflow\ from\ reinsurer + risk\ adjustment\ (RA) + CSM + unamortized\ reinsurance\ commission$$

b) If the CSM of a group of reinsurance contracts held represents a net gain of purchasing reinsurance:

$$Expected\ cash\ inflow\ from\ reinsurer + risk\ adjustment\ (RA) - CSM + unamortized\ reinsurance\ commission$$

(B) is the asset for incurred claims on reinsurance contracts held from the assuming insurer;

The amount expected to be recovered from the assuming insurer in accordance with the reinsurance contract;

(C) is the amount of cash outflows associated with the funds withheld collateral that are included in (A) and (B) above;

(D) are the amounts receivable from the assuming insurer that are not already included in (A) or (B) above;

(E) is the amount of payables to the assuming insurer that are not already included in (A) or (B) above;

Reinsurance payables to the assuming insurer is the amount of the insurer's funds, other than those for collateral purposes, held by the insurer but payable to the assuming insurer in accordance with the reinsurance contract.

(F) is the amount of non-owned deposits held as security from assuming insurer under an acceptable RSA;

(G) is the amount of other acceptable non-owned deposits;

(H) is the amount of funds held to secure payment from the assuming insurer;

(I) is the amount of acceptable letters of credit held as security from assuming insurer.

*4.3.3.3. Margin required*

The margin required for unregistered reinsurance is calculated in the unregistered reinsurance exhibit of the MCT Return and reported as margin required for "Reinsurance ceded to unregistered insurers" in the MCT.

The margin is 20% of premiums associated with the unexpired coverage on reinsurance contracts held, asset for incurred claims recoverable from the assuming insurer and cash flows out for funds withheld (the sum of amounts A, B and C in section 4.3.3.2). The margin requirement for each unregistered reinsurer may be reduced to a minimum of zero by payables to the reinsurer and acceptable collateral (the sum of amounts E to I in section 4.3.3.2) that are in excess of the amounts of premiums associated with the unexpired coverage on reinsurance contracts held, asset for incurred claims recoverable from the assuming insurer, cash flows out for funds withheld and the receivables from the assuming insurer (the sum of amounts A to D in section 4.3.3.2).

#### *4.3.3.4. Collateral*

The collateral used to obtain credit for a specific unregistered reinsurer must materially reduce the risk arising from the credit quality of the reinsurer. In particular, collateral used may not be related party obligations of the unregistered reinsurer (i.e. obligations of the reinsurer itself, its parent, or one of its subsidiaries or associates). With respect to the above three sources available to obtain credit, this implies that:

- To the extent that a ceding insurer is reporting obligations due from a related party of the reinsurer as assets in its annual return, the ceding insurer is precluded from taking credit for funds held to secure payment from the unregistered reinsurer;
- Reinsurers' assets located in Canada in which a ceding company has a valid and perfected first priority security interest under applicable law may not be used to obtain credit if they are obligations of a related party of the unregistered reinsurer; and
- A letter of credit is not acceptable if it has been issued by a related party of the unregistered reinsurer.

Collateral must be available to the company for a period of not less than the remaining term of the liabilities covered by the reinsurance contracts held in order to be valid towards obtaining credit for unregistered reinsurance. In cases where an arrangement contains a renewal provision for the cedant to maintain collateral for a part of or the whole of the remaining term of the liabilities covered by the reinsurance contracts held (e.g. additional fees or higher interest rate), the renewal provision should be included when determining the ceded reserves.

***Non-owned deposits from reinsurers***

Insurers that have received non-owned deposits provided by an unregistered reinsurer must comply with OSFI's *Guidance for Reinsurance Security Agreements*.

Deposits from reinsurers that are "not owned" by an insurer, including deposits held on behalf of reinsurers, are not to be reported on the insurer's balance sheet. Details of these deposits must be reported in the unregistered reinsurance exhibit of the MCT Return.

Non-owned deposits held on behalf of an unregistered assuming reinsurer must be valued at market value as at the end of the statement year, including the amount of investment income due and accrued respecting these deposits.

***Letters of credit***

In order to be recognized for capital purposes, letters of credit must be approved by OSFI. Insurers should refer to *Guidelines for Use of Letters of Credit*, available on OSFI's website, for OSFI's requirements relating to the use of LOCs and their approvals.

The limit on the use of letters of credit to obtain capital credit for unregistered reinsurance is 30% of reinsurance contract assets (the sum of A and B in section 4.3.3.2) from assuming insurers. This limit is applied in the aggregate and not against individual reinsurance exposures.

*Capital requirements*

Letters of credit for unregistered reinsurance are considered a direct credit substitute and are subject to risk factors based on the credit rating of the issuing/confirming bank and the term of the liabilities covered by the reinsurance contracts held. Non-owned deposits held as collateral are subject to the same risk factors as those applied to similar assets owned by the insurer (reference sections 5.3 and 6.1).

Capital requirements for collateral associated with unregistered reinsurance are calculated on an aggregate basis for the total amount of acceptable collateral from each reinsurer using applicable risk factors. Acceptable collateral that is greater than the unregistered reinsurance requirements is considered excess collateral and are not subject to capital requirements.

Two steps are required to compute excess collateral and arrive at a reduction in capital required for excess collateral.

***Step 1 Example: Computation of excess collateral*** (reference *unregistered reinsurance* exhibit of the MCT Return)

| Reinsurance Contracts Held from an Unregistered Insurer | Amount ($) |
|---|---|
| Premiums associated with the unexpired coverage for reinsurance contracts held | 100 |
| Asset for incurred claims recoverable from assuming insurer | 500 |
| Cash flows out for funds withheld | 100 |
| 20% margin on premiums associated with the unexpired coverage, asset for incurred claims and cash flows out for funds withheld recoverable | 140 |
| Receivable from assuming insurer | 40 |
| Payable to assuming insurer | (20) |
| **Unregistered reinsurance exposure** | **860** |
| Collateral required to reduce the margin required to 0<br>(100 + 500 + 100) x 120% + 40 - 20 | 860 |
| | |
| Non-owned deposits | 1,000 |
| Funds held | 100 |
| Letters of credit | 100 |
| **Total collateral** | **1,200** |
| **Excess collateral** (no capital required on this amount)<br>1,200-860 | **340** |

The amount of excess collateral should be calculated separately for each individual reinsurer and then added together.

***Step 2 Example: Reduction in capital required for excess collateral***

The total amount of capital required for collateral should be pro-rated to discount for excess collateral.

Following step 1, the ratio of 0.28 (340/1,200) should be applied to the total amount of capital required for collateral in order to calculate the capital required for collateral excluding the excess. The example calculation is provided in the following table.

| | **Collateral amount** (01) | **Risk factor** (02) | **Total capital required** (03)=(01)x(02) | **Proportional allocation of excess collateral** (04) | **Reduction in capital required for excess collateral** (05)=(03)x(04) |
|---|---|---|---|---|---|
| **LOCs** (AA rating ≤ 1 year) | $100 | 0.25% | $0.25 | | |
| **Non-owned deposits** (AAA bonds ≤1 year) | $500 | 0.25% | $1.25 | | |
| **Non-owned deposits** (AA bonds >1 year ≤5 years) | $500 | 1.00% | $5.00 | | |
| **Funds Held** (demand deposits) | $100 | 0.25% | $0.25 | | |
| **Total** | $1,200 | | $6.75 | 0.28 | $1.89 |

The capital requirements for acceptable collateral, less the excess, are reported as part of capital required for credit risk (reference chapter 6).

***Funds held to secure payment from unregistered reinsurer***

Cash and securities received to secure payment from unregistered reinsurers that have been co-mingled with the insurer's own funds should be reported on the insurer's balance sheet in the appropriate asset categories and will be subject to the corresponding risk factors. Funds held also include reinsurance premiums withheld by the ceding company as specified in the reinsurance contract. Details of funds held must also be reported in the unregistered reinsurance exhibit of the MCT Return. The reinsurance contract must clearly provide that, in the event of the cedant's or reinsurer's insolvency, the funds withheld must form part of the property of the cedant's general estate[41].

In order for a ceding insurer to obtain credit for funds held under a funds withheld reinsurance arrangement, the arrangement must not contain any contractual provision that would require payment of funds withheld to the reinsurer, other than those funds that, together with other forms of acceptable collateral, if any, are in excess of the ceded policy liabilities and the margin

[41] This requirement only applies to reinsurance contracts that came into force on or after January 1, 2018, or that have been renewed after that date.

required for unregistered reinsurance, before all subject policies have expired and all claims settled (e.g. an acceleration clause). Furthermore, the ceding insurer may not provide non-contractual or implicit support, or otherwise create or sustain an expectation that any funds withheld could be paid to the reinsurer, other than those funds that, together with other forms of acceptable collateral, if any, are in excess of the ceded policy liabilities and the margin required for unregistered reinsurance, before all subject policies have expired and all claims settled.

## 4.4. Self-Insured Retention

Self-insured retention (SIR) represents the portion of a loss that is payable by the policyholder. In some cases, SIRs may be included in the policy declaration or in an endorsement to the policy, stipulating that the policy limit applies in excess of the SIR.

To admit SIRs recoverable for regulatory capital purposes, OSFI must be satisfied with the collectability of recoverables, and may require collateral to ensure collectability. For example, collateral may be required when it is deemed that there is an excessive concentration of SIRs owed by any one policyholder.

Letters of credit and other acceptable securities may be used as collateral for SIRs. Collateral used may not be related party obligations of the policyholder (i.e. obligations of the policyholder itself, its parent, or one of its subsidiaries or associates).

Letters of credit for SIRs are considered a direct credit substitute and are subject to a risk factor based on the credit rating of the issuing/confirming bank and the term of ceded liabilities (subject to the provision for excess collateralization). General guidelines concerning letters of credit as referred to in section 4.3 also apply to SIRs. Risk factors for collateral other than letters of credit are the same as those applied to similar assets owned by the insurer (reference Chapter 5 and Chapter 6).

## 4.5. Earthquake and Nuclear Catastrophes

### *4.5.1. Earthquake risk exposure*

Insurers must refer to OSFI's Guideline B-9 *Earthquake Exposure Sound Practices* for details on OSFI's expectations relating to insurers' earthquake exposure risk management and the related definitions. The MCT Guideline outlines the framework for quantifying the earthquake risk exposure for regulatory capital purposes and assessing insurers' capacity and financial preparedness to meet contractual obligations that may arise from a major earthquake.

*Earthquake Reserves Formula:*

| |
|---|
| Earthquake Reserves = (EPR + ERC) x 1.25 |

The amount of earthquake reserves includes Earthquake Premium Reserve (EPR) and Earthquake Reserve Component (ERC) and is added to total capital requirements for the purposes of the MCT/BAAT as capital/margin required at the target level.

ERC *(Section 4.5.1.3)* = **{**Earthquake Risk Exposure *(Section 4.5.1.1)***} - {**Financial Resources *(Section 4.5.1.2)***} $\geq 0$

The ERC must always be greater than or equal to 0.

In the case where EPR is not used as part of financial resources to cover the earthquake risk exposure, i.e. the company has enough financial resources to cover its earthquake risk exposure without the voluntary reserve, the EPR can be deducted from capital available instead of being added to total capital requirements.

*4.5.1.1. Measurement of Earthquake Risk Exposure*

The earthquake *Probable Maximum Loss (PML)* is the threshold dollar value of losses beyond which losses caused by a major earthquake are unlikely. Gross PML, which is the PML amount *after* deductibles but *before* catastrophic and other reinsurance protection, is used for calculating earthquake risk exposure for regulatory purposes. In this section, PML refers to a dollar amount[42] that includes adjustments for data quality, non-modelled exposures and model uncertainty as outlined in Guideline B-9 *Earthquake Exposure Sound Practices*.

*Model approach*

Insurers with material exposure to earthquake risk are required to use models to estimate their PML. Earthquake models include models licensed from various commercial vendors and maintained in-house or run by third parties on behalf of the insurer or can be an internal estimation technique or model developed by the insurer to OSFI's satisfaction.

OSFI expects an insurer to meet a test of financial preparedness for a 500 year return period country-wide earthquake event.

$$\text{Country-wide PML500} = (\text{East Canada PML500}^{\,1.5} + \text{West Canada PML500}^{\,1.5})^{\frac{1}{1.5}},$$

where

- *East Canada PML500* refers to a one in 500 year Eastern Canada event, which represents the 99.8th percentile of the exceedance probability curve plus appropriate adjustments for data quality, model uncertainty, non-modelled business etc., using exceedance probability curves based only on earthquake risk exposure in Eastern Canada.
- *West Canada PML500* refers to a one in 500 year Western Canada event, which represents the 99.8th percentile of the exceedance probability curve plus appropriate adjustments for data quality, model uncertainty, non-modelled business etc., using exceedance probability curves based only on earthquake risk exposure in Western Canada.

[42] The PML amount corresponds to the worldwide exposure for Canadian insurers and Canadian exposure for branches of foreign insurers.

*Standard approach*

Insurers should use the following standard formula for calculating their PML if:

- The insurer does not use an earthquake model for calculating its PML, or
- An earthquake risk exposure estimation technique is not to OSFI's satisfaction

| |
|---|
| Country-wide PML = Maximum (East Canada PTIV – applicable policyholder deductibles, West Canada PTIV – applicable policyholder deductibles), |

where

*PTIV* is the property total insured value for earthquake risk exposure, which includes building, contents, outbuildings, additional living expenses and business interruption.

*4.5.1.2. Financial Resources*

An insurer must have adequate financial resources to cover its earthquake risk exposure calculated in section 4.5.1.1. Financial resources that can be used to support the insurer's earthquake risk exposure include:

- capital & surplus;
- earthquake premium reserve;
- reinsurance coverage; and
- capital market financing.

- *Capital and Surplus*

Insurers can count up to a maximum of 10% of capital and surplus as part of their financial resources to cover their earthquake risk exposure. This maximum limit is subject to supervisory discretion and can be lowered to an amount less than 10% of capital and surplus.

For Canadian insurers, the amount of capital and surplus corresponds to a maximum of 10% of total equity as at the end of the reporting period being filed.

A Canadian branch of a foreign insurer may use up to 10% of its worldwide capital and surplus to cover its earthquake risk exposure; however, it must be able to demonstrate that after an event, at least 10% of the worldwide capital and surplus is still available to meet its obligations to Canadian policyholders. The amount of worldwide capital and surplus corresponds to the Canadian dollar amount as at the end of the most recent reporting period filed in the home jurisdiction.

➢ *Earthquake Premium Reserve*

Earthquake Premium Reserve (EPR) is the voluntary accumulation of earthquake premiums. This amount must not exceed the country-wide PML500[43].

- In the case where the earthquake coverage premium is implicitly included in an overall policy premium, the insurer should be able to demonstrate the reasonableness of the premium allocation specifically attributed to earthquake coverage. As an example, in the case of catastrophic reinsurance coverage not specific to earthquake risk, an allocation of the premium amount must be made and the reasonableness of the reinsurer's premium allocation must be demonstrated.
- Any earthquake premium contributed to the EPR must remain in the EPR unless there is a material decrease in the exposure.
- Should an earthquake occur and trigger claims, companies would establish an incurred claims provision including claims adjustment expenses. The EPR component would be reduced by an amount equal to the claims reserves.
- Any reduction in the EPR should be brought back into unappropriated surplus immediately.
- The EPR is a component of the reserves amount reported on the balance sheet.

➢ *Reinsurance Coverage*

The estimated reinsurance coverage available should be based on reinsurance in force on the day immediately following the end of the financial reporting period and should be equal to an amount of reinsurance collectable for a loss of the size of the PML, net of retention (e.g., policies in force on July 1 for MCT calculations as at June 30).

➢ *Capital Market Financing*

Prior supervisory approval from OSFI is required before these instruments can be recognized as a financial resource in the calculation of the earthquake risk formula. Refer to Guideline B-9 *Earthquake Exposure Sound Practices* for additional information.

*4.5.1.3. Earthquake Reserve Component*

Earthquake Reserve Component (ERC) is an additional component used to cover an insurer's earthquake risk exposure not covered by the financial resources. The formula to compute the ERC is as follows:

| |
|---|
| ERC = Country-wide PML500 - capital and surplus - reinsurance coverage - capital market financing - EPR |

[43] Refer to the Canadian *Income Tax Act* for the annual contribution limit.

- Should an earthquake occur and trigger claims, companies would establish an incurred claims provision including claims adjustment expenses. The ERC component would be reduced after the EPR, by an amount equal to the claims reserves.
- Any reduction in the ERC should be brought back into unappropriated surplus immediately.
- The ERC is a component of the reserves amount reported on the balance sheet.

### *4.5.2. Nuclear reserve*

Insurers issuing nuclear risk policies are required to record an additional provision of 100% of premiums received, less premiums paid, and net of commissions, multiplied by 1.25. This provision must be held by the insurer for twenty years, after which it may be reversed.

## 4.6. Accident and Sickness Business

Accident and sickness reserves determined by actuaries in their valuations are primarily intended to cover expected variations in these requirements based on assumptions about mortality and morbidity. Margins on unexpired coverage and liabilities for incurred claims for accident and sickness insurance are included in the MCT to take into account possible abnormal negative variations in actual requirements.

The unexpired coverage margin is calculated by applying a factor to annual insurance revenue. Generally, the factor varies with the length of the premium guarantee remaining. For Canadian insurers, a margin for insurance acquisition cash flows arising from commissions is also required and is calculated by multiplying unamortized insurance acquisition cash flows on commissions, by 45%. The liability for incurred claims margin is calculated by applying a factor to the liability for incurred claims experience relating to prior years. Generally, the factor varies with the length of benefit period remaining.

Instructions for calculating the margin required for accident and sickness business are included in this section. The total requirement calculated should be included in the amount reported as the margin required for liability for incurred claims and unexpired coverage in the MCT.

<u>Instructions for calculating the margin required</u>

Mortality/morbidity risk for accident and sickness insurance is the risk that the liability assumptions about mortality and morbidity rates will be wrong.

To compute the mortality/morbidity component, a factor is applied to the measure of the exposure to the risk. The resulting values are added to arrive at the liability for incurred claims and unexpired coverage margin requirements.

The factors used in deriving the risk component vary with the guaranteed term remaining in the exposure measure. The measure of the exposure to risk is as follows:

| Risk | Measure of Exposure | Applicable Guaranteed Term |
|---|---|---|
| Disability Income, New Claims Risk | Annual insurance revenue | the length of the premium guarantee remaining |
| Disability Income, Continuing Claims Risk | Disability income net reserves relating to claims of prior years | the length of the benefit period remaining |
| Accidental Death and Dismemberment | Net amount at risk = the total net face amount of insurance less the policy liabilities (even if negative) | the period over which the mortality cost cannot be changed (limited to the remaining period to expiry or maturity) |

**1. Disability income insurance**

The additional risks associated with non-cancellable guaranteed premium business should be recognized. As well, increased volatility is characteristic of disability income insurance, as compared to medical and dental expense reimbursement business.

*Unexpired coverage margin*

The unexpired coverage component relates to claims arising from the current year's coverage, and includes the risks of incidence and claims continuance. The factors applied to the measure of exposure are as follows:

| Percentage of Annual Insurance Revenue[44] | | Length of Premium Guarantee Remaining |
|---|---|---|
| Individually Underwritten | Other | |
| 15% | 15% | less than or equal to 1 year |
| 25% | 31.25% | greater than 1 year, but less than or equal to 5 years |
| 37.5% | 50% | greater than 5 years |

*Liability for incurred claims margin*

The liability for incurred claims component covers the risk of claims continuance arising from coverage provided in prior years. The factor applies to disability income claim reserves related to claims incurred in prior years, including the portion of the provision for incurred but unreported claims. The factor applied to the measure of risk exposure is as follows:

[44] For travel insurance, annual insurance revenue should be considered revenue premiums.

| Duration of Disability | | | Length of Benefit Period Remaining |
|---|---|---|---|
| **less than or equal to 2 years** | **greater than 2 years but less than or equal to 5 years** | **greater than 5 years** | |
| 5.0% | 3.75% | 2.5% | **less than or equal to 1 year** |
| 7.5% | 5.625% | 3.75% | **greater than 1 year but less than or equal to 2 years** |
| 10.0% | 7.5% | 5.0% | **greater than 2 years or lifetime** |

## 2. Accidental death and dismemberment

To compute the components for accidental death and dismemberment, the following factors are applied to the net amount at risk:

| Type | | Factor | Guaranteed Term Remaining |
|---|---|---|---|
| **Participating** | Group | .019% | less than or equal to 1 year |
| | All other | .038% | All |
| **Non-participating** *Individual* | Adjustable | .038% | All |
| | All other | .019% | less than or equal to 1 year |
| | | .038% | greater than 1 year but less than or equal to 5 years |
| | | .075% | greater than 5 years, whole life, and all life insurance continued on disabled lives without payment of premiums |
| **Non-participating** *Group* | All | .019% | less than or equal to 1 year |
| | | .038% | greater than 1 year but less than or equal to 5 years |
| | | .075% | greater than 5 years, whole life, and all life insurance continued on disabled lives without payment of premiums |

For participating business without meaningful dividends, and participating adjustable policies where mortality adjustability is not reasonably flexible, the factors for all other non-participating business should be used.

If current premium rates are significantly less than the maximum guaranteed premium rates, the guarantee term used is that applicable to the current rates.

Additional adjustments are according to group insurance. They are as follows:

- The above factors may be multiplied by 50% for any group benefit that carries one of the following features: 1) a "guaranteed no risk", 2) deficit repayment by policyholders, or 3) "hold harmless" agreement where the policyholder has a legally enforceable debt to the insurer.
- No component is required for "Administrative services only" group cases where the insurer has no liability for claims.

Only "all cause" policies solicited by mail should be included in this section for automobile and common carrier accidental death and dismemberment. Specific accident perils included in accidental death and dismemberment policies solicited by mail, and "free" coverages on premium credit card groups, should be included in the "Other accident and sickness benefits" section.

### 3. Other accident and sickness benefits

*Unexpired coverage margin*

The component requirement is 15% of annual insurance revenue.

*Liability for incurred claims margin*

The component requirement is 12.5% of the provision for the liability for incurred claims relating to prior years. The use of prior years avoids a double component requirement for the liability for incurred claims arising from coverage purchases by premiums paid in the current year.

### 4. Special policyholder arrangements

For group insurance deposits in excess of liabilities, excluding the liability for such deposits may reduce the component requirement on any policy to a minimum of zero. Such deposits must be:

- made by policyholders;
- available for claims payment (e.g., claim fluctuation and premium stabilization reserves, and accrued provision for experience refunds); and
- returnable, net of applications, to policyholders on policy termination.

# Chapter 5. Market Risk

Market risk arises from potential changes in rates or prices in various markets such as for interest rates, foreign exchange rates, equities, real estate, and other market risk exposures. Exposure to this risk results from trading, investing, and other business activities, which create on- and off-balance sheet positions.

Investments in mutual funds or other similar assets must be broken down by type of investment (bonds, preferred shares, common shares, etc.) and assigned the appropriate risk factor relating to the investment. If these investments are not reported on a prorated basis, then the factor of the riskiest asset held in the fund is assigned to the entire investment.

## 5.1. Interest Rate Risk

Interest rate risk represents the risk of economic loss resulting from market changes in interest rates and the impact on interest rate sensitive assets and liabilities. Interest rate risk arises due to the volatility and uncertainty of future interest rates.

Assets and liabilities whose value depends on interest rates are affected. Interest rate sensitive assets include fixed income assets. Interest rate sensitive liabilities include those for which the values are determined using a discount rate.

To compute the interest rate risk margin, a duration and an interest rate shock factor are applied to the fair value of interest rate sensitive assets and liabilities. The interest rate risk margin is the difference between the change in the value of interest rate sensitive assets and the change in the value of interest rate sensitive liabilities, taking into account the change in the value of recognized interest rate derivative contracts, as appropriate.

### *5.1.1. General requirements*

The components used to calculate the interest rate risk margin are as follows.

#### *5.1.1.1. Interest rate sensitive assets*

The interest rate sensitive assets to be included in the calculation of the interest rate margin are those for which their fair value will change with movements in interest rates. Although certain assets, for example loans and bonds held to maturity, may be reported on the balance sheet on an amortized cost basis, their economic value, and changes in that value, are to be considered for interest rate risk margin purposes. Interest rate sensitive assets include:

- term deposits and other similar short-term securities (excluding cash),
- bonds and debentures,
- commercial paper,
- loans,

- mortgages (residential and commercial),
- mortgage-backed and asset-backed securities (MBS and ABS),
- preferred shares,
- interest rate derivatives held for other than hedging purposes,
- insurance contracts assets, and
- reinsurance contracts held assets.

Investments in mutual funds and other similar assets should be broken down by type of investment (bond, preferred share, common shares, etc.). The assets in the fund that are interest rate sensitive are to be included in the determination of the fair value of the insurer's total interest rate sensitive assets.

Other assets, such as cash, investment income due and accrued, common shares and investment properties, are not to be included in the determination of the value of interest rate sensitive assets. Such assets are assumed for interest rate risk margin determination purposes to be insensitive to movements in interest rates.

Branches of foreign companies are to include only vested interest rate sensitive assets and interest rate sensitive assets included as adjustments to net assets available in the determination of the margin for interest rate risk.

*5.1.1.2. Interest rate sensitive liabilities*

The interest rate sensitive liabilities to be included in the calculation of the interest rate risk margin are those for which their fair value will change with movements in interest rates. The following liabilities are considered sensitive to interest rates and are to be included:

- insurance contracts liabilities for incurred claims,
- insurance contracts liabilities for remaining coverage,
- reinsurance contract held liabilities, and
- liabilities due to reinsurers under funds withheld reinsurance arrangements.

Insurers must obtain OSFI's supervisory approval in order to include other liabilities in the calculation of interest rate risk margin.

A mutual P&C insurer's residual interest of owner-policyholders is not to be included in the interest rate sensitive liabilities in the calculation of the interest rate risk margin.

*5.1.1.3. Allowable interest rate derivatives*

Interest rate derivatives are those for which the cash flows are dependent on future interest rates. They may be used to hedge an insurer's interest rate risk and as such may be recognized in the determination of the margin required for interest rate risk, subject to the conditions below.

Only plain-vanilla interest rate derivatives that clearly serve to offset fair value changes in a company's capital position due to changes in interest rates may be included in the interest rate risk calculation. Plain-vanilla interest rate derivative instruments are limited to the following:

- interest rate and bond futures,
- interest rate and bond forwards, and
- single-currency interest rate swaps.

Other interest rate derivatives, including interest rate options, caps and floors are not considered plain-vanilla and may not be recognized in the determination of the interest rate risk margin.

Insurers must understand the interest rate hedging strategies that they have in place and be able to demonstrate to OSFI, upon request, that the underlying hedges decrease interest rate risk exposure and that the addition of such derivatives does not result in overall increased risk. For example, insurers are expected to be able to demonstrate that they have defined the hedging objectives, the class of risk being hedged, the nature of the risk being hedged, the hedge horizon, and have considered other factors, such as the cost and liquidity of the hedging instruments. In addition, the ability to demonstrate an assessment, retrospectively or prospectively, of the performance of the hedge would be appropriate. If the insurer cannot demonstrate that the derivatives result in decreased overall risk, then additional capital may be required, and companies in this situation should contact OSFI for details.

Derivatives used for hedging an insurer's interest rate risk are subject to credit risk requirements. Refer to section 6.2 for further details.

*5.1.1.4. Duration of interest rate sensitive assets and liabilities*

Insurers are required to calculate the duration of the interest rate sensitive assets and liabilities for the purpose of the interest rate risk requirement calculation. The duration of an asset or a liability is a measure of the sensitivity of the value of the asset or liability to changes in interest rates[45]. More precisely, it is the percentage change in an asset or liability value given a change in interest rates.

The calculation of duration for an asset or liability will depend on the duration measure chosen and whether the cash flows of the asset or liability are themselves dependent on interest rates. *Modified duration* is a duration measure in which it is assumed that interest rate changes do not

[45]An asset or liability for which the future cash flows are not adjusted to reflect the time value of money has a duration of zero.

change the expected cash flows. *Effective duration* is a duration measure in which recognition is given to the fact that interest rate changes may change the expected cash flows.

An insurer may use either modified duration or effective duration to calculate the duration of its assets and liabilities. However, the duration methodology chosen should apply to all interest rate sensitive assets and liabilities under consideration and the same methodology must be used consistently from year to year (i.e. "cherry-picking" is not permitted).

The cash flows associated with interest rate derivatives are sensitive to changes in interest rates and therefore the duration of an interest rate derivative must be determined using effective duration. In particular, if a company has interest rate derivatives on its balance sheet that lie within the scope of section 5.1.1.3, then it must use effective duration for all of its interest rate sensitive assets and liabilities.

The *portfolio duration* (modified or effective) can be obtained by calculating the weighted average of the duration of the assets or the liabilities in the portfolio.

The *dollar duration* of an asset or liability is the change in dollar value of an asset or liability for a given change in interest rates.

### *5.1.1.5. Modified duration*

Modified duration is defined as the approximate percentage change in the present value of cash flows for a 100 basis point change in the annually compounded yield rate, assuming that expected cash flows do not change when interest rates change.

Modified duration can be written as:

$$\text{Modified duration} = \frac{1}{1+\text{Yield}} \times \frac{\Sigma\, t \times PVCF_t}{\text{Market Value}}$$

where,

Yield = the annually compounded yield to maturity of the cash flows,
$PVCF_t$ = the present value of the cash flow at time t discounted at the yield rate, and

the sum in the numerator is taken over all times *t* at which a cash flow occurs.

### *5.1.1.6. Effective duration*

Effective duration is a duration measure in which recognition is given to the fact that interest rate changes may change the expected cash flows. Although modified duration will give the same estimate of the percentage fair value change for an option-free series of cash flows, the more appropriate measure for any series of cash flows with an embedded option is effective duration.

Effective duration is determined as follows:

$$\text{Effective duration} = \frac{\text{Fair value if yields decline} - \text{fair value if yields rise}}{2 \text{ x (initial price) x (change in yield in decimal)}}$$

where,

$\Delta y$ = change in yield in decimal
$V_0$ = initial fair value
$V_-$ = fair value if yields decline by $\Delta y$
$V_+$ = fair value if yields increase by $\Delta y$,

then effective duration is as follows:

$$\frac{V_- - V_+}{2 \text{ x } (V_0) \text{ x } (\Delta y)}$$

*5.1.1.7. Portfolio duration*

The duration of a portfolio of interest rate sensitive assets or liabilities is to be determined by calculating the weighted average of the duration of the assets or liabilities in the portfolio. The weight is the proportion of the portfolio that a security comprises. Mathematically, a portfolio's duration is calculated as follows:

$$w_1D_1 + w_2D_2 + w_3D_3 + \ldots + w_kD_K$$

where,

$w_i$ = fair value of security i/fair value of the portfolio
$D_i$ = duration of security i
$K$ = number of securities in the portfolio.

*5.1.1.8. Dollar fair value change*

Modified and effective duration are related to percentage fair value changes. The interest rate risk requirements depend on determining the adjustment to the fair value of interest rate sensitive assets and liabilities for dollar fair value changes. The dollar fair value change can be measured by multiplying duration by the dollar fair value and the number of basis points (in decimal form). In other words,

Dollar fair value change = duration x dollar fair value x interest rate change (in decimal)

*5.1.1.9. Duration of allowable interest rate derivatives*

Effective duration is the appropriate measure that should be used when assets or liabilities have embedded options. For portfolios with eligible plain-vanilla interest rate derivatives, insurers should be using effective dollar duration because the insurer is hedging the dollar interest rate risk exposure.

**Example 5-1**: Effective dollar duration of a swap

Assuming an insurer has a longer duration for its interest rate sensitive assets and a shorter duration for its interest rate sensitive liabilities, the current dollar duration position of the insurer, prior to taking into consideration any interest rate derivatives, is effectively as follows:

| | | |
|---|---|---|
| Insurer's dollar duration | = | dollar duration of assets – dollar duration of liabilities > 0 |

The insurer enters into a single-currency interest rate swap in which it pays fixed-rate and receives floating-rate. The dollar duration of a swap for a fixed-rate payer can be broken down as follows:

| | | |
|---|---|---|
| Effective dollar duration of a swap for a fixed-rate payer | = | effective dollar duration of a floating-rate bond – effective dollar duration of a fixed rate bond |

Assuming the dollar duration of the floating-rate bond is near zero, then

| | | |
|---|---|---|
| Effective dollar duration of a swap for a fixed-rate payer | = | 0 – effective dollar duration of a fixed-rate bond |

The dollar duration of the swap position is negative; therefore, adding the swap position reduces the company's dollar duration of assets and moves the insurer's overall dollar duration position closer to zero.

### *5.1.2. Interest rate risk margin*

The interest rate risk margin is determined by measuring the economic impact on the insurer of a $\Delta y$ change in interest rates. The $\Delta y$ interest rate shock factor is 1.25% ($\Delta y = 0.0125$).

A. The estimated change in the interest rate sensitive asset portfolio for an interest rate shock factor increase of $\Delta y$ is determined as follows:

| | | |
|---|---|---|
| Dollar fair value change of the interest rate sensitive asset portfolio | = | ( Duration of interest rate sensitive asset portfolio ) x $\Delta y$ x ( Fair value of interest rate sensitive asset portfolio ) |

B. The change in the interest rate sensitive liabilities for an interest rate shock factor increase of $\Delta y$ is determined as follows:

| | | |
|---|---|---|
| Dollar fair value change of the interest rate sensitive liabilities | = | ( Duration of interest rate sensitive liabilities ) x $\Delta y$ x ( Fair value of interest rate sensitive liabilities ) |

C. The change in the allowable interest rate derivatives for the interest rate shock factor increase of $\Delta y$ is determined as follows:

| | | |
|---|---|---|
| Effective dollar duration of the allowable interest rate derivatives portfolio | = | sum of the effective dollar duration of the allowable interest rate derivatives for a $\Delta y$ increase in interest rates |

D. The capital requirement for an interest rate shock factor increase of Δy is determined as the greater of zero and A – B + C.

E. Steps A through C are repeated for an interest rate shock factor decrease of Δy (i.e. -Δy) and the capital requirement for an interest rate decrease of Δy is the greater of zero and A – B + C.

F. The interest rate risk margin is then determined as the maximum of D or E.

## 5.2. Foreign Exchange Risk

The foreign exchange risk margin is intended to cover the risk of loss resulting from fluctuations in currency exchange rates and is applied to the entire business activity of the insurer.

### *5.2.1. General requirements*

Two steps are necessary to calculate the foreign exchange risk margin. The first is to measure the exposure in each currency position. The second is to calculate the capital requirement for the portfolio of positions in different currencies.

The foreign exchange risk margin is 10% of the greater of:

i.) the aggregate net long positions in each currency, adjusted by effective allowable foreign exchange rate hedges if any are used, and

ii.) the aggregate net short positions in each currency, adjusted by effective allowable foreign exchange rate hedges if any are used,

where effective allowable foreign exchange rate hedges are limited to plain-vanilla foreign currency derivatives such as futures and forward foreign currency contracts and currency swaps.

Investments in mutual funds and other similar assets should be broken down by type of investment (bonds, preferred shares, common shares, etc.) for calculating foreign exchange risk margin. The assets in the fund that are denominated in a foreign currency are to be included in the calculation to determine the capital requirement for each currency position. In cases where a claim liability is recorded in Canadian dollars but the settlement of the claim will be made in a foreign currency, the liability must be included in the calculation of the foreign exchange risk margin.

### *5.2.2. Foreign exchange risk margin*

***Step 1: Measuring the exposure in a single currency***

<u>The net open position for each currency is calculated by summing:</u>

- the net spot position, defined as all asset items less all liability items denominated in the currency under consideration, including accrued interest and accrued expenses if they are subject to exchange rate fluctuations;

- the net forward position (i.e. all net amounts under forward foreign exchange transactions, including currency futures and the principal on currency swaps), valued at current spot market exchange rates or discounted using current interest rates and translated at current spot rates;
- guarantees (and similar instruments) that are certain to be called and are likely to be irrecoverable;
- net future income/expenses not yet accrued but already fully hedged (at the discretion of the reporting institution); and
- any other item representing a profit or loss in foreign currencies.

Adjustments:

For insurers with foreign operations, those items that are currently deducted from capital available in calculating the MCT ratio and are denominated in the corresponding currency may be excluded from the calculation of net open currency positions, to a maximum of zero. For example:

- Goodwill and other intangibles;
- Interests in non-qualifying subsidiaries, associates and joint ventures; and
- Non-allowable foreign exchange rate hedges that are not considered in capital available.

Carve-out:

An insurer with a net open long position in a given currency may reduce the amount of the net exposure, to a maximum of zero, by the amount of a carve-out, which is equivalent to a short position of up to 25% of the liabilities denominated in the corresponding currency.

***Step 2: Calculating the capital requirement for the portfolio***

The nominal amount (or net present value) of the net open position in each foreign currency calculated in *step 1* is converted at a spot rate into Canadian dollars. The gross capital requirement is 10% of the overall net open position, calculated as the greater of:

- the sum of the net open long positions; and
- the absolute value of the sum of the net open short positions.

*Example:*

An insurer has $100 of U.S. assets and $50 of U.S. liabilities.

- The net spot position, defined as assets less liabilities, is a long position of $50.
- The carve-out, using 25% of liabilities, is:

  = 25% * 50

  = 12.5

- Therefore, the foreign exchange risk margin is:

  = 10% * MAX[46] ((net spot position - carve-out), 0)

  = 10% * MAX ((50 – 12.5), 0)

  = 10% * 37.5

  = 3.75

*5.2.2.1. Allowable foreign currency hedges*

Foreign currency derivatives are those for which the cash flows are dependent on future foreign exchange rates. They may be used to hedge an insurer's foreign exchange risk and as such, may be recognized in the determination of the capital requirement for foreign exchange risk, subject to the following requirements.

Only effective hedges that offset the changes in fair value of the hedged item may be included in the foreign exchange risk calculation. The company must be able to demonstrate to OSFI the effectiveness of its foreign exchange hedges.

Companies with foreign currency derivatives on their balance sheet must be able to demonstrate that the addition of such derivatives does not result in increased risk. If the insurer cannot demonstrate that the derivatives do not result in increased risk, then OSFI may require additional capital.

Only plain-vanilla foreign currency derivatives may be recognized in the calculation of the foreign exchange capital requirement. Plain-vanilla foreign currency derivative instruments are limited to the following:

- futures foreign currency contracts,
- forward foreign currency contracts, and
- currency swaps.

Other foreign currency derivatives, including options on foreign currencies, are not considered plain-vanilla and are not to be recognized in the determination of the foreign exchange risk margin.

Derivatives used for hedging an insurer's foreign exchange risk are subject to credit risk requirements. Refer to section 6.2 for further details.

*5.2.2.2. Measurement of forward currency positions*

Forward currency positions should be valued at current spot market exchange rates. It would not be appropriate to use forward exchange rates since they partly reflect current interest rate

[46] The carve-out can be used to reduce the net open long currency position to a minimum of zero.

differentials. Companies that base their normal management accounting on net present values are expected to use the net present values of each position, discounted using current interest rates and translated at current spot rates, for measuring their forward currency positions.

*5.2.2.3. Accrued and unearned interest income and expenses*

Accrued interest, accrued income and accrued expenses should be treated as a position if they are subject to exchange rate fluctuations. Unearned but expected future interest, income or expenses may be included, provided the amounts are certain and have been fully hedged by allowable forward foreign exchange contracts. Companies must be consistent in their treatment of unearned interest, income and expenses and must have written policies covering the treatment. The selection of positions that are only beneficial to reducing the overall position will not be permitted for capital purposes.

*5.2.2.4. Unregistered reinsurance*

A separate component calculation must be performed for each group of liabilities ceded to an unregistered reinsurer that is backed by a distinct pool of assets, where the defining characteristic of the pool is that any asset in the pool is available to pay any of the corresponding liabilities. Each calculation should take into consideration the ceded liabilities, the assets supporting them, and deposits placed by the reinsurer to cover the capital requirement for the ceded liabilities if the deposits are in a currency different from the currency in which the ceded liabilities are payable to policyholders. If some of the assets supporting the liabilities ceded to an unregistered reinsurer are held by the ceding company (e.g. funds withheld), the company's corresponding liability should be treated as an asset in the calculation of the open positions for the ceded business.

Excess deposits placed by an unregistered reinsurer within a pool of supporting assets may be used to reduce the foreign exchange risk requirement for the corresponding ceded business to a minimum of zero. Any requirements not covered by excess deposits must be added to the ceding company's own requirement.

## 5.3. Equity Risk

Equity risk is the risk of economic loss due to fluctuations in the value of common shares and other equity securities.

### *5.3.1. Common shares and joint ventures*

A 30% risk factor applies to investments in common shares and joint ventures in which a company holds less than or equal to 10% ownership interest.

### *5.3.2. Futures, forwards, and swaps*

Equity futures, forwards, and swaps attract a 30% risk factor, which is applied to the market value of the underlying equity security or index. Where a swap exchanges a return on an equity

security or index for a return on a different equity security or index, a 30% risk factor applies to the market value of both equity securities or indices for which the returns are being exchanged.

*Example:*

An insurer has entered into a one-year swap during which it will pay the 3-month Canadian Dollar Offered Rate (CDOR) plus fees, and receive the total return on a notional index of equities that was worth 100 at the time of inception. The index of equities is currently worth 110. A 30% equity risk charge will apply to 110 for the long position in the index, but no capital charge will be required on the short position in the bond because such a position is not subject to an equity risk charge.

In addition to the capital requirements set out in this section, futures, forwards, and swaps are subject to credit risk requirements. Refer to section 6.2 for further details.

### *5.3.3. Short positions*

The capital requirements for short positions in common shares, equity futures, forwards, and swaps that do not wholly or partially offset a long equity position are determined by assuming the instrument is held long and then applying the corresponding risk factor. Common shares, futures, forwards, and swaps eligible for offset recognition and the corresponding capital treatment are described in section 5.3.4.

### *5.3.4. Recognition of equity hedges*

Equity futures, forwards, and swaps, as well as common shares can be used to wholly or partially hedge an equity exposure. Insurers may recognize qualifying equity hedges in the calculation of the capital requirements in accordance with section 5.3.4.1 and 5.3.4.2.

Insurers must document the equity hedging strategies employed and demonstrate that the hedging strategies decrease the overall risk. The documentation must be available for review, upon request. If the insurer cannot demonstrate, to the satisfaction of the Superintendent, that the hedging strategies result in decreased overall risk, then additional capital above that calculated as per sections 5.3.4.1 and 5.3.4.2 may be required, at the discretion of the Superintendent.[47]

For hedges to qualify, they must be issued by an entity that:

- issues obligations which attract a 0% factor under section 6.1.2; or
- is rated A- or better (including clearing houses rated A- or better).

[47] An insurer may contact OSFI to discuss the adequacy of its documentation and/or risk assessment to assess the likelihood or amount of potential additional capital that may be required.

*5.3.4.1. Identical equity securities or indices*

Long and short positions in exactly the same underlying equity security or index may be considered to be offsetting so that the capital requirements are calculated for the net exposure only. Individual instruments of portfolios that qualify for the capital treatment under section 5.3.4.2 cannot be carved out of the portfolios to receive the capital treatment of section 5.3.4.1.

Only common shares and plain-vanilla equity futures, forwards, and swaps can obtain the capital treatment under this section. Exotic equity derivatives[48] do not qualify for this treatment.

*5.3.4.2. Closely linked equity securities or indices*

A portfolio of common shares and equity futures, forwards, and swaps can be used to partially hedge the equity exposure of another portfolio of similar instruments. When the instruments contained in both portfolios are closely linked, instead of following the capital requirements set out in sections 5.3.1, 5.3.2, and 5.3.3, insurers may calculate the capital requirements for the combined portfolios in the following manner:

(1- Correlation Factor) × 1.5 × MIN (*market value of the portfolio of hedging instruments, market value of the portfolio of instruments being hedged*)

The capital requirements set out above are capped at 60% of the minimum market value of both portfolios.

The difference between the market value of the two portfolios is not considered a hedged position and is subject to a 30% risk factor.

The Correlation Factor is derived by using:

$$CF = A*(B/C)$$

where:

**A** represents the historical correlation between the returns on the portfolio of instruments being hedged and the returns on the portfolio of hedging instruments

**B** represents the minimum of [standard deviation of returns on the portfolio of instruments being hedged, standard deviation of returns on the portfolio of hedging instruments]

**C** represents the maximum of [standard deviation of returns on the portfolio of instruments being hedged, standard deviation of returns on the portfolio of hedging instruments]

[48] An example of an exotic derivative would be one that has a discontinuous payoff structure.

The historical correlations and standard deviations must be calculated on a weekly basis, covering the previous 52-week period. The returns on each portfolio of hedging instruments used to calculate the components of the CF must be determined by assuming that the portfolio is held long. The returns on each portfolio must be measured net of additional capital injections, and must include the returns on each component of the portfolio. For example, the returns on both the long and short legs of a total return swap included in a portfolio must be reflected in the calculation of the CF.

The CF for the previous 52 weeks is required to be calculated for each of the past four quarters. The Correlation Factor is the lowest of the four CFs calculated and is used to calculate capital requirements.

In order for the portfolios to obtain the capital treatment set out in this section, the following conditions must be met:

- The instruments in both portfolios are limited to exchange-traded common shares, and plain-vanilla equity futures, forwards, and swaps where the underlying asset is an exchange-traded common share or an equity index. Portfolios that contain instruments other than those specified in this section will be subject to the capital treatment under sections 5.3.1, 5.3.2, and 5.3.3.
- The CF is determined at the portfolio level. Individual instruments cannot be carved-out of the portfolios and receive the capital treatment as per section 5.3.4.1.
- The portfolios that are part of a hedging strategy must have been established at least two years prior to the reporting date. In addition, the hedging strategy and the active management strategy on which both portfolios are based must not have changed in the past two years prior to the reporting date.[49] Portfolios that have been established for at least two years but have undergone a change in the hedging strategy or active management strategy will attract a 30% risk factor.

*Example:*

Suppose a portfolio of instruments is valued at $200 and is paired with another portfolio of instruments as part of a qualifying equity hedge. Assuming that the second portfolio is worth $190 and that the Correlation Factor between the two portfolios is 0.95, the total capital charge for both portfolios will be 190 × 5% × 1.5 + $10 × 30% = $17.25.

Portfolios that were established less than two years prior to the reporting date attract the following capital treatment:

[49] For the purposes of this section, the hedging strategy and active management strategy together are deemed to be unchanged if the ex-ante equity risk profile of the combined portfolios is maintained. For example, the ex-ante equity risk profile is maintained if the combined beta is continuously targeted to be 0 (the hedging strategy), and if instrument selection is continuously based on the price-earnings ratio (the active management strategy).

1. No recognition of the equity hedge in the first year following the establishment of the portfolios (i.e. a 30% factor is applied to both portfolios); and
2. in the second year, the sum of:
    - T × capital requirements for the combined portfolios using the correlation factor approach described in this section[50]; and
    - (1-T) × capital requirements set out in 1 above.

    T equals 20%, 40%, 60%, and 80% in the first, second, third, and fourth quarter, respectively, of the second year following the establishment of the portfolios.

*Example:*

Two portfolios (as part of an equity hedge), each equal to 100, are established on April 1, 2016. On March 31, 2017, the capital charge for both portfolios will be 30% × 100 + 30% × 100 = 60. On June 30, 2017, assuming that the Correlation Factor is 0.90, the combined portfolios will be subject to a capital charge of 20% × 10% × 1.5 × 100 + 80% × 60% × 100 = 51.

## 5.4. Real Estate Risk

Real estate risk is the risk of economic loss due to changes in the value of a property or in the amount and timing of cash flows from a property.

The risk factors are as follows:

| | |
|---|---|
| Owner-occupied properties | 10% |
| Investment properties | 20% |

For owner-occupied properties, the risk factor is applied to the value using the cost model, excluding any unrealized fair value gains (losses) arising at the conversion to IFRS, or subsequent unrealized fair value gains (losses) due to revaluation.

## 5.5. Right-of-Use Assets

The risks associated with right-of-use assets are related to fluctuating market lease rates and to potential changes in the amount and timing of cash flows from early cancellation penalties, and costs associated with renegotiating or locating a new lease.

A 10% risk factor is applied to right-of-use assets, determined in accordance with relevant accounting standards, associated with leased owner-occupied properties and associated with leased assets that fall in the category of “other assets” (e.g. equipment).

[50] For the purposes of this calculation, the Correlation Factor must be determined based on actual portfolio returns (i.e. portfolio returns up to the reporting date). Projected (simulated) returns cannot be used. The Correlation Factor must be determined as the lowest of available 52 week Correlation Factors given the actual history of portfolio returns. During the second year, the number of available 52 week Correlation Factors will increase from one to four as time elapses.

A 20% risk factor is applied to right-of-use assets, determined in accordance with relevant accounting standards, associated with leased investment properties.

## 5.6. Other Market Risk Exposures

Other market risk exposures include assets that fall in the category “other assets,” for example, equipment, that are exposed to asset value fluctuations that may result in the value realized upon disposal being less than the balance sheet carrying value. A 10% risk factor applies to other assets as part of the total capital requirements for market risk.

# Chapter 6. Credit Risk

Credit risk is the risk of loss arising from a counterparty's potential inability or unwillingness to fully meet its contractual obligations due to an insurer. Exposure to this risk occurs any time funds are extended, committed, or invested through actual or implied contractual agreements. Components of credit risk include loan loss/principal risk, pre-settlement/replacement risk and settlement risk. Counterparties include issuers, debtors, borrowers, brokers, policyholders, reinsurers and guarantors.

All on- and off-balance sheet exposures are subject to a specific risk factor that either: 1) corresponds to the external credit rating of the counterparty or issuer or 2) represents a prescribed factor determined by OSFI. To determine the capital requirements for balance sheet assets, factors are applied to the balance sheet values or other specified values of these assets. To determine the capital requirements for off-balance sheet exposures, factors are applied to the exposure amounts determined according to the section 6.2. Collateral and other forms of credit risk mitigators may be used to reduce the exposure. No risk factors are applied to assets deducted from capital available (reference section 2.3). The resulting amounts are summed to arrive at the credit risk capital requirements.

In respect of invested assets, insurers must comply with OSFI's Guideline B-2 *Investment Concentration Limit for Property and Casualty Insurance Companies*.

## 6.1. Capital Requirements for Balance Sheet Assets

For the purpose of calculating the capital requirements for credit risk, balance sheet assets should be valued at their balance sheet carrying amounts, with the following exceptions:

- Loans measured at fair value through profit and loss, fair value hedge accounting, or fair valued through other comprehensive income, should be measured at amortized cost;
- financial assets measured at amortized cost should be valued gross of IFRS 9 Stage 1 and Stage 2 expected credit loss provisions; and
- off-balance sheet exposures should be valued in accordance with section 6.2.

### *6.1.1. Use of ratings*

Many of the risk factors in this chapter depend on the external credit rating assigned to an asset or an obligor. In order to use a factor that is based on a rating, an insurer must meet all of the conditions specified in this section. For MCT purposes, insurers may recognize credit ratings from the following rating agencies:

- DBRS
- Fitch Rating Services
- Japan Credit Rating Agency (JCR)

- Kroll Bond Rating Agency (KBRA)
- Moody's Investors Service
- Rating and Investment Information (R&I)
- Standard and Poor's (S&P)

An insurer must choose the rating agencies it intends to rely on and then use their ratings for MCT purposes consistently for each type of asset or obligation. Companies should not select the assessments provided by different rating agencies with the sole intent to reduce their capital requirements (i.e. "cherry picking" is not permitted).

Any rating used to determine a factor must be publicly available, i.e. the rating must be published in an accessible form and included in the rating agency's transition matrix. Ratings that are made available only to the parties to a transaction do not satisfy this requirement.

If an insurer is relying on multiple rating agencies and there is only one assessment for a particular asset or obligor, that assessment should be used to determine the capital requirements. If there are two assessments from the rating agencies used by an insurer and these assessments differ, the insurer should apply the risk factor corresponding to the lower of the two ratings. If there are three or more assessments for an asset or obligor from an insurer's chosen rating agencies, the insurer should exclude one of the ratings that corresponds to the lowest capital requirement, and then use the rating that corresponds to the lowest capital requirement of those that remain (i.e. the insurer should use the second-highest rating from those available, allowing for multiple occurrences of the highest rating).

Where an insurer holds a particular securities issue that carries one or more issue-specific assessments, the capital requirements for the asset or obligor will be based on these assessments. Where an insurer's asset is not an investment in a specifically rated security, the following principles apply:

- In circumstances where the borrower has a specific rating for an issued debt security, but the insurer's asset is not an investment in this particular security, a rating of BBB- or better on the rated security may only be applied to the insurer's unrated asset if this asset ranks pari passu or senior to the rated security in all respects. If not, the credit rating cannot be used and the insurer's asset must be treated as an unrated obligation.
- In circumstances where the borrower has an issuer rating, this assessment typically applies to senior unsecured assets or obligations on that issuer. Consequently, only senior assets or obligations on that issuer will benefit from a BBB- or better issuer assessment; other unassessed assets or obligations on the issuer will be treated as unrated. If either the issuer or one of its issues has a rating of BB+ or lower, this rating should be used to determine the capital requirements for an unrated asset or obligation on the issuer.
- Short-term assessments are deemed to be issue specific. They can only be used to derive capital requirements for assets or obligations arising from the rated facility. They cannot be generalized to other short-term assets or obligations, and in no event can a short-term rating be used to support a risk factor for an unrated long-term asset or obligation.

- Where the risk factor for an unrated exposure is based on the rating of an equivalent exposure to the borrower, foreign currency ratings should be used for exposures in foreign currency. Canadian currency ratings, if separate, should only be used to determine the capital requirements for assets or obligations denominated in Canadian currency.

The following additional conditions apply to the use of ratings:

- External assessments for one entity within a corporate group may not be used to determine the risk factors for other entities within the same group.
- No rating may be inferred for an unrated entity based on assets that the entity possesses.
- In order to avoid the double counting of credit enhancement factors, companies may not recognize credit risk mitigation if the credit enhancement has already been reflected in the issue-specific rating.
- An insurer may not recognize a rating if the rating is at least partly based on unfunded support (e.g. guarantees, credit enhancement or liquidity facilities) provided by the insurer itself or one of its associates.
- Any assessment used must take into account and reflect the entire amount of credit risk exposure an insurer has with regard to all payments owed to it. In particular, if an insurer is owed both principal and interest, the assessment must fully take into account and reflect the credit risk associated with repayment of both principal and interest.
- Insurers may not rely on unsolicited ratings in determining the risk factors for an asset, except where the asset is a sovereign exposure and a solicited rating is not available.

### *6.1.2. Credit risk factors*

Various risk factors are applied to invested assets depending on the external credit rating and the remaining term to maturity as outlined below.

Investments in mutual funds or other similar assets must be broken down by type of investment (bonds, preferred shares, etc.) and assigned the appropriate risk factor relating to the investment. If these investments are not reported on a prorated basis, then the factor of the riskiest asset held in the fund, is assigned to the entire investment.

#### *6.1.2.1. Long-term obligations*

Long-term obligations, including term deposits, bonds, debentures, and loans that are not eligible for a 0% risk factor attract risk factors according to the following table. Long-term obligations generally have an original term to maturity at issue of 1 year or more.

| Long-Term Obligations | | | |
|---|---|---|---|
| **Rating** | **Remaining Term to Maturity** | | |
| | **1 year or less** | **Greater than 1 year up to and including 5 years** | **Greater than 5 years** |
| AAA | 0.25% | 0.50% | 1.25% |
| AA+ to AA- | 0.25% | 1.00% | 1.75% |
| A+ to A- | 0.75% | 1.75% | 3.00% |
| BBB+ to BBB- | 1.50% | 3.75% | 4.75% |
| BB+ to BB- | 3.75% | 7.75% | 8.00% |
| B+ to B- | 7.50% | 10.50% | 10.50% |
| Unrated | 6.00% | 8.00% | 10.00% |
| Below B- | 15.50% | 18.00% | 18.00% |

- Remaining term to maturity denotes the number of years from the reporting date until the maturity date.
- Insurers may use effective maturity as an option for determining risk factors for investments in long-term obligations subject to a determined cash flow schedule. The following formula may be used to calculate effective maturity:

$$\textit{Effective Maturity (M)} = \frac{\sum_t t \times CF_t}{\sum_t CF_t},$$

  where $CF_t$ denotes the cash flows (principal, interest payments and fees) contractually payable by the borrower in period $t$.
- In cases where an insurer elects not to calculate an effective maturity or if it is not feasible to do so using the above formula, the insurer is required to use the maximum remaining time (in years) that the borrower is permitted to fully discharge its contractual obligation (principal, interest, and fees) under the terms of the loan agreement. Normally, this would correspond to the nominal maturity or term to maturity of the instrument.
- Where information is not available to determine the redemption/maturity of an asset, insurers must use the "greater than 5 years" category for that asset.

### *6.1.2.2. Short-term obligations*

Short-term obligations, including commercial paper, that are not eligible for a 0% risk factor have risk factors assigned according to the following table. Short-term obligations generally have an original term to maturity at issue of no more than 365 days.

| Short-Term Obligations | |
|---|---|
| **Rating** | **Factor** |
| A-1, F1, P-1, R-1 or equivalent | 0.25% |
| A-2, F2, P-2, R-2 or equivalent | 0.50% |
| A-3, F3, P-3, R-3 or equivalent | 2.00% |
| Unrated | 6.00% |
| All other ratings, including non-prime and B or C ratings | 8.00% |

#### *6.1.2.3. Asset-backed securities*

The category of asset-backed securities encompasses all securitizations, including collateralized mortgage obligations and mortgage-backed securities, as well as other exposures that result from stratifying or tranching an underlying credit exposure. For exposures that arise as a result of asset securitization transactions, insurers should refer to Guideline B-5: *Asset Securitization*[51] to determine whether there are functions provided (e.g., credit enhancement and liquidity facilities) that require capital for credit risk.

*National Housing Act (NHA) mortgage-backed securities:*

NHA mortgage-backed securities that are guaranteed by Canada Mortgage Housing Corporation (CMHC) receive a factor of 0% to recognize the fact that obligations incurred by CMHC are legal obligations of the Government of Canada.

*Other asset-backed securities:*

The capital requirements for all other asset-backed securities are based on their external ratings. In order for an insurer to use external ratings to determine a capital requirement, the insurer must comply with all of the operational requirements for the use of ratings in Guideline B-5: *Asset Securitization*.

For asset-backed securities (other than resecuritizations) rated BBB or higher, the capital requirement is the same as the requirement specified in subsection 6.1.2.1 for a long-term obligation having the same rating and maturity as the asset-backed security. If an asset-backed security is rated BB, an insurer may recognize the rating only if it is a third-party investor in the security. The credit risk factor for an asset-backed security (other than a resecuritization) rated BB in which a company is a third-party investor is 300% of the requirement for a long-term obligation rated BB having the same rating and maturity as the security.

The credit risk factors for short-term asset-backed securities (other than resecuritizations) rated A-3 or higher are the same as those in subsection 6.1.2.2 for short-term obligations having the same rating.

The credit risk factor for any resecuritization rated BBB or higher is 200% of the risk factor applicable to an asset-backed security having the same rating and maturity as the resecuritization.

The credit risk factor for securitization exposures classified within the highest risk category of securitization exposures, as defined in Guideline B-5: *Asset Securitization*, is 60%.

The credit risk factor for any asset-backed security that is not mentioned above (including unrated securities and any asset-backed security that is rated lower than BB) is 60%.

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[51] Guideline B-5 should be read in conjunction with any current Advisories concerning securitization (e.g., the October 2008 Advisory, "*Securitization – Expected Practices*").

### *6.1.2.4. Preferred shares*

Risk factors for preferred shares should be assigned according to the following table:

| Preferred Shares | |
|---|---|
| **Rating** | **Factor** |
| AAA, AA+ to AA-, Pfd-1, P-1 or equivalent | 3.00% |
| A+ to A-, Pfd-2, P-2 or equivalent | 5.00% |
| BBB+ to BBB-, Pfd-3, P-3 or equivalent | 10.00% |
| BB+ to BB-, Pfd-4, P-4 or equivalent | 20.00% |
| B+ or lower, Pfd-5, P-5 or equivalent or unrated | 30.00% |

### *6.1.2.5. Other balance sheet assets*

Other risk factors for balance sheet assets:

| Factor | Asset |
|---|---|
| *0.00%* | • Cash held on the company's own premises[52],<br>• Obligations[53] of federal, provincial, and territorial governments in Canada,<br>• Obligations of agents of the federal, provincial or territorial governments in Canada whose obligations are, by virtue of their enabling legislation, direct obligations of the parent government,<br>• Obligations of sovereigns rated AA- or better and their central banks[54],<br>• Obligations that have been explicitly, directly, irrevocably and unconditionally guaranteed by a government entity eligible for a 0% risk factor including, for example, residential mortgages insured under the NHA or equivalent provincial mortgage insurance program and NHA mortgage-backed securities that are guaranteed by the Canada Mortgage and Housing Corporation,<br>• Current tax assets (income tax receivables),<br>• Premiums associated with the unexpired coverage on reinsurance contracts held from registered reinsurers arising from intra-group pooling arrangements approved by OSFI (reference section 4.3.2.2).<br>• Asset for incurred claims recoverable from registered reinsurers arising from intra-group pooling arrangements approved by OSFI.<br>• Any deductions from capital, including goodwill, intangible assets and interests in non-qualifying subsidiaries, associates, and joint ventures with more than 10% ownership interest. |

[52] Applies to all vested cash assets of branches.
[53] Includes securities, loans and accounts receivable.
[54] Sovereign obligations rated lower than AA- may not receive a factor of 0%, and are instead subject to the factor requirements in section *6.1.2*.

| | |
|---|---|
| *0.25%* | • Demand deposits, certificates of deposit, drafts, checks, acceptances and similar obligations that have an original maturity of less than three months, and that are drawn on regulated deposit-taking institutions subject to the solvency requirements of the Basel Framework.<br><br>(Note: where the maturity of the asset is longer than three months, the risk factor related to the credit rating of the regulated deposit-taking institution would apply instead.) |
| *0.70%* | • Insurance receivables from registered reinsurers that are not included in premiums associated with the unexpired coverance on reinsurance contracts held or asset for incurred claims recoverable, excluding intra-group pooling arrangements approved by OSFI,<br>• Receivables from the Facility Association Residual Market and Uninsured Automobile Fund. |
| *2.50%* | • Investment income due and accrued,<br>• Premiums associated with the unexpired coverage on reinsurance contracts held from (reference section 4.3.2.2) registered reinsurers, excluding intra-group pooling arrangements approved by OSFI,<br>• Asset for incurred claims recoverable from registered reinsurers, excluding intra-group pooling arrangements approved by OSFI. |
| *4%* | • First mortgages on one- to four-unit residential dwellings. |
| *5%* | • Receivables, outstanding less than 60 days, from agents, brokers, non-qualifying subsidiaries, associates, joint ventures, and policyholders, including instalment premiums and other receivables[55]. |
| *10%* | • Receivables, outstanding 60 days or more, from agents, brokers, non-qualifying subsidiaries, associates, joint ventures and policyholders, including instalment premiums and other receivables[56],<br>• Commercial mortgages and other residential mortgages that do not qualify as first mortgages on one- to four-unit residential dwellings,<br>• The amount of available refunds of defined benefit pension fund surplus assets included in capital available,<br>• Deferred tax assets arising from temporary differences that the institution could recover from income taxes paid in the three immediate preceding years. DTAs from temporary differences that are in excess of the amount of taxes recoverable in the three immediate preceding years should be deducted from capital available.<br>• Other investments not specified in this section or section 5.5 as part of other market risk exposures, excluding derivative-related amounts. Capital requirements for derivative-related amounts included in other investments are set out in section 6.2, |

[55] Includes receivables from unregistered insurers for reinsurance contracts issued.
[56] Includes receivables from unregistered insurers for reinsurance contracts issued.

| | |
|---|---|
| | • Other assets not specified in this section or section 5.5 as part of other market risk exposures, excluding other investments. |
| *15%* | • Mortgages secured by undeveloped land (i.e. construction financing), other than land used for agricultural purposes or for the production of minerals. A property recently constructed or renovated will be considered as "under construction" until it is completed and 80% leased. |
| *20%* | • Other recoverables (mainly salvage and subrogation) on the liability for incurred claims,<br>• Self-insured retention recoverables not deducted from capital (reference section 4.4),<br>• Assets held for sale (other than financial)[57]. |
| *45%* | • Loans or other forms of lending (bonds, debentures, mortgages, etc.) to non-qualifying (non-consolidated) subsidiaries, associates and joint ventures with more than a 10% ownership interest, that are not reported as equity on their financial statements.<br>• Unamortized insurance acquisition commission cash flows related to A&S business (reference section 4.6) |

## 6.2. Capital Requirements for Off-Balance Sheet Exposures

The capital required for off-balance sheet exposures such as structured settlements, letters of credit or non-owned deposits, derivatives and other exposures is calculated in a manner similar to on-balance sheet assets in that the credit risk exposure is multiplied by a counterparty risk factor to arrive at the capital required. However, unlike most assets, the face amount of an off-balance sheet exposure does not necessarily reflect the true credit risk exposure. To approximate this exposure, a credit equivalent amount is calculated for each exposure. This amount, net of any collateral or guarantees, is then multiplied by a credit conversion factor. For letters of credit and non-owned deposits, the credit equivalent amount is the face value. The determination of the counterparty credit risk categories and the approach for determining the eligibility of collateral and guarantees is the same as it is for other assets. For letters of credit and non-owned deposits, the counterparty credit risk is found under section 4.3.

Insurers should also refer to OSFI's Guideline B-5: *Asset Securitization*, which outlines the regulatory framework for asset securitization transactions, including transactions that give rise to off-balance sheet exposures.

[57] 1) Alternatively, assets classified as held for sale may be re-consolidated (look-through approach) at the option of the insurer. If this method is selected, any write-down made as a result of re-measuring the assets classified as held for sale at the lower of carrying amount and fair value less costs to sell should be reflected in the MCT after re-consolidation. Any asset within a consolidated group that is deducted from capital available for MCT purposes should continue to be deducted from capital when it becomes an asset held for sale.
2) If the insurer has elected to apply a 20% risk factor to assets held for sale instead of using the look-through approach, associated liabilities held for sale should be subject to the usual MCT treatment of liabilities as per chapter 4.

The risk to an insurer associated with structured settlements, letters of credit, non-owned deposits, derivatives and other exposures and the amount of capital required to be held against this risk is:

i.) The credit equivalent amount of the instrument at the reporting date;

ii.) Less: the value of eligible collateral securities or guarantees (reference section 6.3);

iii.) Multiplied by: a factor reflecting the nature and maturity of the instrument (credit conversion factor); and

iv.) Multiplied by: a factor reflecting the risk of default of the counterparty to a transaction (counterparty credit risk).

### *6.2.1. Credit equivalent amount*

The credit equivalent amount related to off-balance sheet exposures varies according to the type of instrument.

#### *6.2.1.1. Structured settlements*

The credit equivalent amount for a "Type 1" structured settlement is the current replacement cost of the settlement, which is gross of the coverage provided by Assuris.

"Type 1" structured settlements are not recorded as liabilities on the balance sheet, and have the following characteristics:

i.) An annuity is purchased by an insurer who is named the owner. There is an irrevocable direction from the insurer to the annuity underwriter to make all payments directly to the claimant.

ii.) Since the annuity is non-commutable, non-assignable and non-transferable, the insurer is not entitled to any annuity payments and there are no rights under the contractual arrangement that would provide any current or future benefit to the insurer.

iii.) The insurer is released by the claimant indicating settlement of the claim amount.

iv.) The insurer remains liable to make payments to the claimant in the event and to the extent the annuity underwriter fails to make payments under the terms and conditions of the annuity and the irrevocable direction given.

Under this type of structured settlement arrangement, the insurer is not required to recognize a liability to the claimant, nor is it required to recognize the annuity as a financial asset. However, the insurer is exposed to some credit risk by guaranteeing the obligation of the annuity underwriter to the claimant and, consequently, must set aside additional capital.

Insurers should refer to Guideline D-5 *Accounting for Structured Settlements*.

### *6.2.1.2. Derivatives*

The credit equivalent amount for derivatives is the positive replacement cost (obtained by "marking to market") plus an amount for potential future credit exposure (an "add-on" factor).

Derivatives include forwards, futures, swaps, purchased options, and other similar contracts. Insurers are not exposed to credit risk for the full face value of these contracts (notional principal amount); only to the potential cost of replacing the cash flow (on contracts showing a positive value) if the counterparty defaults. The credit equivalent amounts are assigned the risk factor appropriate to the counterparty in order to calculate the capital requirement.

The credit equivalent amount depends on the maturity of the contract and the volatility of the underlying instrument. It is calculated by adding:

i.) the total replacement cost (obtained by "marking to market") of all contracts with positive value; and

ii.) an amount for potential future credit exposure (or "add-on"). This is calculated by multiplying the notional principal amount by the following factors:

**Derivative "Add-On" Factors**

| **Residual Maturity** (01) | **Interest Rate** (02) | **Exchange Rate and Gold** (03) | **Equity** (04) | **Precious Metals except Gold** (05) | **Other Instruments** (06) |
|---|---|---|---|---|---|
| *One year or less* | 0.0% | 1.0% | 6.0% | 7.0% | 10.0% |
| *One year to five years* | 0.5% | 5.0% | 8.0% | 7.0% | 12.0% |
| *Over five years* | 1.5% | 7.5% | 10.0% | 8.0% | 15.0% |

Notes:

1. Instruments traded on exchanges do not require capital for counterparty credit risk where they are subject to daily margining requirements.
2. For contracts with multiple exchanges of principal, the factors are to be multiplied by the number of remaining payments in the contract.
3. For contracts that are structured to settle outstanding exposures following specified payment dates, and where the terms are reset so that the market value of the contract is zero on these specified dates, the residual maturity is considered to be the time until the next reset date. In the case of interest rate contracts with remaining maturities of more than one year and that also meet the above criteria, the add-on factor is subject to a floor of 0.5%.
4. Contracts not covered by columns (02) to (05) in the above table are to be treated as "other instruments" for the purpose of determining the add-on factor.
5. No potential credit exposure would be calculated for single currency floating/floating interest rate swaps; the credit exposure on these contracts would be evaluated solely on the basis of their mark-to-market value.

6. The add-ons are based on effective rather than stated notional amounts. In the event that the stated notional amount is leveraged or enhanced by the structure of the transaction, companies must use the actual or effective notional amount when determining potential future exposure. For example, a stated notional amount of $1 million with payments calculated at two times LIBOR would have an effective notional amount of $2 million.
7. Potential credit exposure is to be calculated for all over-the-counter (OTC) contracts (with the exception of single currency floating/floating interest rate swaps), regardless of whether the replacement cost is positive or negative.

No add-on for potential future exposure is required for credit derivatives. The credit equivalent amount for a credit derivative is equal to the greater of its replacement cost or zero.

*6.2.1.3. Other exposures*

***Commitments***

A commitment involves an obligation (with or without a material adverse change or similar clause) of the insurer to fund its customer in the normal course of business should the customer seek to draw down the commitment. This includes:

i.) extending credit in the form of loans or participations in loans, lease financing receivables, mortgages or loan substitutes; or

ii.) purchasing loans, securities, or other assets.

Normally, commitments involve a written contract or agreement and a commitment fee or some other form of consideration.

The maturity of a commitment should be measured from the date when the commitment was accepted by the customer, regardless of whether the commitment is revocable or irrevocable, conditional or unconditional, until the earliest date on which:

i.) the commitment is scheduled to expire, or

ii.) the insurer can, at its option, unconditionally cancel the commitment.

***Repurchase and reverse repurchase agreements***

A securities repurchase (repo) is an agreement whereby a transferor agrees to sell securities at a specified price and repurchase the securities on a specified date and at a specified price. Since the transaction is regarded as a financing transaction for accounting purposes, the securities remain on the balance sheet. Given that these securities are temporarily assigned to another party, the factor accorded to the asset should be the higher of the factor of the security and the factor of the counterparty to the transaction (net of any eligible collateral).

A reverse repo agreement is the opposite of a repo agreement, and involves the purchase and subsequent sale of a security. Reverse repos are treated as collateralized loans, reflecting the economic reality of the transaction. The risk is therefore to be measured as an exposure to the counterparty. Where the asset temporarily acquired is a security that attracts a preferential factor, this would be recognized as collateral and the factor would be reduced accordingly.

#### *Guarantees provided in securities lending*

In securities lending, insurers can act as principal to the transaction by lending their own securities or as agent by lending securities on behalf of clients. When the insurer lends its own securities, the risk factor is the higher of:

- the risk factor related to the instruments lent, or
- the risk factor for an exposure to the borrower of the securities. The exposure to the borrower may be reduced if the insurer holds eligible collateral (reference section 6.3). Where the insurer lends securities through an agent and receives an explicit guarantee of the return of the securities, the insurer may treat the agent as the borrower subject to the conditions in section 6.3.2.

When the insurer, acting as an agent, lends securities on behalf of a client and guarantees that the securities lent will be returned, or the insurer will reimburse the client for the current market value, the insurer should calculate the capital requirement as if it were the principal to the transaction. The capital requirements are those for an exposure to the borrower of the securities, where the exposure amount may be reduced if the insurer holds eligible collateral (reference section 6.3).

### *6.2.2. Credit conversion factors*

Separate credit conversion factors exist for structured settlements, letters of credit, non-owned deposits, derivatives and other exposures.

For other exposures, the weighted average of the credit conversion factors, described below, for all of these instruments held by the P&C insurer, should be used.

| Factor | Instrument |
|---|---|
| *100%* | • Direct credit substitutes (general guarantees of indebtedness and guarantee-type instruments, including standby letters of credit and non-owned deposits serving as financial guarantees for, or supporting, loans and securities).<br>• Derivatives such as forwards, futures, swaps, purchased options (including options purchased over the counter) and other similar derivative contracts, including:<br>i.) Interest rate contracts (single currency interest rate swaps, basis swaps, forward rate agreements and products with similar characteristics, interest rate futures, interest rate options purchased, and similar derivative contracts based on specific parameters as well as on indices, etc.).<br>ii.) Equity contracts (forwards, swaps, purchased options, and similar derivative contracts based on specific parameters as well as on indices, etc.).<br>iii.) Exchange rate contracts (gold contracts, cross-currency swaps, cross-currency interest rate swaps, outright forward foreign exchange contracts, currency futures, currency options purchased, and similar derivative contracts based on specific parameters as well as on indices, etc.).<br>iv.) Precious metals (except gold) and other commodity contracts (forwards, swaps, purchased options, and similar derivative contracts based on specific parameters as well as on indices, etc.).<br>v.) Other derivative contracts based on specific parameters as well as on indices (such as catastrophe insurance options and futures).<br>• Forward agreements (contractual obligations) to purchase assets.<br>• Sale and repurchase agreements.<br>• All other exposures not reported elsewhere (provide details). |
| 50% | • Structured settlements that are not recorded as liabilities on the balance sheet (refer to Type 1 characteristics and to Guideline D-5 *Accounting for Structured Settlements*).<br>• Transaction-related contingencies (for example, warranties and standby letters of credit related to a particular transaction).<br>• Commitments with an original maturity exceeding one year. |
| 20% | • Commitments with an original maturity of one year or less. |
| 0% | • Commitments that are unconditionally cancellable at any time without prior notice. |

### *6.2.3. Risk factors*

Risk factors for off-balance sheet exposures are assigned a risk factor consistent with section 6.1. All criteria in section 6.1 around the use of ratings are applicable to off-balance sheet exposures.

Risk factors for structured settlements, which are considered long-term exposures, are based on the credit rating of the counterparty from which the annuity is purchased. The risk factors are as follows:

| Structured Settlements | |
|---|---|
| **Rating** | **Risk factor** |
| Rated A- and higher | 2% |
| Rated BBB+ to B- | 8% |
| Unrated | 10% |
| Below B- | 18% |

If the structured settlement is not rated by one of the four rating agencies listed in section 6.1.1, an insurer may use a credit rating from another reputable rating agency. The use of an alternative rating agency must comply with all the criteria around the use of ratings specified in section 6.1.1, including a consistent use of the same rating agency in order to assign a risk factor based on the credit rating of the annuity underwriter.

## 6.3. Capital Treatment of Collateral and Guarantees

### *6.3.1. Collateral*

A collateralized transaction is one in which:

- a company has a credit exposure or potential credit exposure; and
- the credit exposure or the potential credit exposure is hedged in whole or in part by collateral posted by a counterparty or by a third party on behalf of the counterparty.

Recognition of collateral in reducing the capital requirement is limited to cash or securities rated A- or higher. Any collateral must be held throughout the period for which the exposure exists. Only that portion of an exposure that is covered by eligible collateral will be assigned the risk factor given to the collateral, while the uncovered portion retains the risk factor of the underlying counterparty. Only collateral securities with a lower risk factor than the underlying exposure will lead to reduced capital requirements. All criteria in section 6.1 around the use of ratings are applicable to collateral. Where a rating is not available for the collateral asset, exposure, or counterparty where applicable, no reduction in capital required is permitted.

The effects of collateral may not be double counted. Therefore, insurers may not recognize collateral on claims for which an issue-specific rating is used that already reflects that collateral.

Collateral securities used to reduce capital requirements must materially reduce the risk arising from the credit quality of the underlying exposure. In particular, collateral used may not be related party obligations of the issuer of the underlying exposure (i.e. obligations of the underlying counterparty itself, its parent, or one of its subsidiaries or associates).

### *6.3.2. Guarantees*

Investments (principal and interest) or exposures that have been explicitly, directly, irrevocably and unconditionally guaranteed by a guarantor whose long-term issuer credit rating is A- and higher, may attract the risk factor allocated to a direct claim on the guarantor where the desired effect is to reduce the risk exposure. Thus only guarantees[58] issued by entities with a lower risk factor than the underlying counterparty will lead to reduced capital requirements. To be eligible, guarantees must be legally enforceable.

Where the recovery of losses on a loan, financial lease agreement, security or exposure is partially guaranteed, only the part that is guaranteed is to be weighted according to the risk factor of the guarantor (see examples below). The uncovered portion retains the risk factor of the underlying counterparty.

All criteria in section 6.1 around the use of ratings remain applicable to guarantees. Where a rating is not available for the investment, exposure, or guarantor where applicable, no reduction in capital required is permitted.

An insurer may not recognize a guarantee provided by a related party (parent, subsidiary or associate) of the insurer. This treatment follows the principle that guarantees within a corporate group are not a substitute for capital.

The effects of credit protection may not be double counted. Therefore, no capital recognition is given to credit protection on claims for which an issue-specific rating is used that already reflects that protection.

To be eligible, a guarantee must cover the full term of the exposure, i.e. no recognition will be given to a guarantee if there is a maturity mismatch[59].

#### *6.3.2.1. Additional requirements for guarantees*

The following conditions must be satisfied in order for a guarantee to be recognized:

1. On the qualifying default/non-payment of the counterparty, the insurer may in a timely manner pursue the guarantor for any monies outstanding under the documentation governing the transaction. The guarantor may make one lump sum payment of all monies under such documentation to the insurer, or the guarantor may assume the future payment obligations of the counterparty covered by the guarantee. The insurer must have the right to receive any such payments from the guarantor without first having to take legal action in order to pursue the counterparty for payment.

[58] Letters of credit for which a company is the beneficiary are included within the definition of guarantees, and receive the same capital treatment.

[59] A maturity mismatch occurs when the residual maturity of the credit protection is less than that of the underlying exposure.

2. The guarantee is an explicitly documented obligation assumed by the guarantor.
3. Except as noted in the following sentence, the guarantee covers all types of payments the underlying obligor is expected to make under the documentation governing the transaction, for example notional amount, margin payments etc. Where a guarantee covers payment of principal only, interest and other uncovered payments should be treated as an unsecured amount in accordance with section 6.1.2.

**Example 6-1:** Credit risk exposure.

To record a $100,000 bond rated AAA due in 10 years that has a government guarantee of 90%, the insurer would report a balance sheet value of $90,000 ($100,000 x 90%) in the 0% risk weighted category and a balance value of $10,000 ($100,000 - $90,000) in the AAA category under bonds expiring or redeemable in more than five years. The capital required in the 0% risk weighted category is $0 ($90,000 x 0.0%). The capital required in the AAA category is $125 ($10,000 x 1.25%) for a total capital requirement of $125. An example of the calculation, assuming no other assets, is provided in the chart below.

| | **Factor** (%) | **Balance Sheet Value** | **Capital Required** |
|---|---|---|---|
| Investments: | | | |
| Term Deposits, Bonds And Debentures: | | | |
| - Expiring or redeemable in more than five years: | | | |
| 0% risk factor | 0.0% | $90,000 | $0 |
| Rating: AAA | 1.25% | $10,000 | $125 |
| **Total** | | **$100,000** | **$125** |

**Example 6-2:** Type 1 structured settlement.

To record a $300,000 Type 1 structured settlement rated BBB+ to B-, backed by collateral or a guarantee of $200,000 from a counterparty rated A- or higher, the insurer would report a credit equivalent amount of $300,000 and collateral and guarantees of negative $200,000 in the BBB+ to B- category, and collateral and guarantees of $200,000 in the A- and higher category.

The capital required in the BBB+ to B- category is $4,000 (($300,000 - $200,000) x 50% x 8%). The capital required in the A- and higher category is $500 ($200,000 x 50% x 0.5%) for a total capital requirement of $4,500. An example of the calculation, assuming no other exposures, is provided in the table below.

| | **Credit Equivalent Amount** (01) | **Collateral and Guarantees** (02) | **Credit Conversion Factor** (03) | **Risk Factor** (04) | **Capital Required** (05) |
|---|---|---|---|---|---|
| Structured Settlements: | | | | | |
| 0% risk factor | | | | | |
| Rated A- and higher | | $200,000 | 50% | 0.5% | $500 |
| Rated BBB+ to B- | $300,000 | ($200,000) | 50% | 8.0% | $4,000 |
| **Total** | | | | | **$4,500** |

# Chapter 7. Operational Risk

Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. The definition includes legal risk[60] but excludes strategic and reputation risk.

Exposure to operational risk results from either day-to-day operations or a specific, unanticipated event.

## 7.1. Operational Risk Formula

The two risk drivers used to determine the operational risk margin are capital required and premiums, subject to a cap.

$$\textit{Operational risk margin} = MIN\ \{30\%\ CR_0,\ (8.50\%\ CR_0 + 2.50\%\ P_d + 1.75\%\ P_a + 2.50\%\ P_r + 2.50\%\ P_\Delta) + \mathrm{MAX}(0.75\%\ P_{aig},\ 0.75\%\ P_{rig})\}$$

where:

- $\boldsymbol{CR_0}$ is total capital required for the reporting period, before the operational risk margin and diversification credit
- $\boldsymbol{P_d}$ is direct premiums received in the past 12 months for insurance contracts issued
- $\boldsymbol{P_a}$ is premiums received in the past 12 months for reinsurance contracts issued arising from third party reinsurance
- $\boldsymbol{P_{aig}}$ is premiums received in the past 12 months for reinsurance contracts issued arising from intra-group pooling arrangements
- $\boldsymbol{P_r}$ is premiums paid in the past 12 months for reinsurance contracts held arising from third party reinsurance
- $\boldsymbol{P_{rig}}$ is premiums paid in the past 12 months for reinsurance contracts held arising from intra-group pooling arrangements
- $\boldsymbol{P_\Delta}$ is growth in gross premiums received in the past 12 months above a 20% threshold

## 7.2. Components of Operational Risk Margin

### *7.2.1. Capital required*

A portion of the operational risk margin is based on total capital required, reflecting the overall riskiness of an insurer. An 8.50% risk factor applies to total capital required, before the operational risk margin and diversification credit.

[60] Legal risk includes, but is not limited to, exposure to fines, penalties, or punitive damages resulting from supervisory actions, as well as private settlements.

### *7.2.2. Premium volume*

The following risk factors apply to insurance premiums:

- *2.50% for direct premiums received for insurance contracts issued*
- *1.75% for premiums received for reinsurance contracts issued arising from third party reinsurance*
- *0.75% for premiums received for reinsurance contracts issued arising from intra-group pooling arrangements*
- *2.50% for premiums paid for reinsurance contracts held arising from third party reinsurance*
- *0.75% for premiums paid for reinsurance contracts held arising from intra-group pooling arrangements*

The 2.50% risk factor for direct premiums received and the 1.75% risk factor for premiums received from third party reinsurance contracts issued capture an insurer's operational risk exposure on new business and renewals.

The 2.50% risk factor for premiums paid for reinsurance contracts held from third party reinsurance captures the operational risk remaining with the ceding insurer. While the insurer cedes a portion of its insurance risk exposure through reinsurance, the operational risk remains with the ceding insurer. Because the capital requirements for insurance liabilities (reference section 4.2) are calculated on the net amount of risk (net of reinsurance), the portion of operational risk requirement calculated as 8.50% of capital required does not account for the operational risk on the entire business of the insurer.

*Intra-group pooling arrangements*

The 0.75% risk factor for premiums received for reinsurance contracts issued and premiums paid for reinsurance contracts held arising from intra-group pooling arrangements captures the additional operational risks associated with pooling premiums within a group compared to a company that does not enter into transactions moving the premiums from a company to another within a group.

Only premiums received and paid from intra-group pooling arrangements between associated Canadian federally or provincially regulated companies are included in $\boldsymbol{P_{aig}}$ and $\boldsymbol{P_{rig}}$, and a prior supervisory approval from OSFI is required. If prior approval is not granted, the premiums received and paid in the intra-group pooling arrangement will be considered as premiums arising from a third party reinsurance arrangement and, therefore, will be included in $\boldsymbol{P_a}$ and $\boldsymbol{P_r}$ for capital requirement calculation purposes.

In cases where property and casualty subsidiaries are consolidated in the financial statements of the property and casualty parent company, $\boldsymbol{P_d}$, $\boldsymbol{P_a}$, and $\boldsymbol{P_r}$, at the parent level, must be determined on a consolidated basis, while $\boldsymbol{P_{aig}}$ and $\boldsymbol{P_{rig}}$ must be equal to the non-consolidated intra-group pooled premiums received and paid by the parent company, respectively.

- For example, assume that two subsidiaries, company Y and company Z cede 100% of their direct business to Company X (the parent). Company X then cedes 20% of the total of the direct business of each company (including the parent's business) to each subsidiary. Assuming that each of the three companies receive $100 of direct premiums, the following amounts would apply to calculate the operational risk margin for company X:

  $\boldsymbol{P_d}$: 3 x $100 (direct premiums received by each company) = $300

  $\boldsymbol{P_a}$ and $\boldsymbol{P_r}$: $0 (assuming all three companies are not part of third party reinsurance arrangements)

  $\boldsymbol{P_{aig}}$: 2 x $100 (premiums received by company X as part of the intra-group arrangement) = $200

  $\boldsymbol{P_{rig}}$: 2 x $60 (premiums paid by company X as part of the intra-group arrangement) = $120

  The capital requirement for operational risk associated with the premiums would be calculated as follows:

  $$(2.50\%\ P_d + 1.75\%\ P_a + 2.50\%\ P_r + 2.50\%\ P_{\Delta}) + MAX\ (0.75\%\ P_{aig,}, 0.75\%\ P_{rig}) =$$

  $$(\$7.50 + 0 + 0 + 0) + \$1.50 = \$9.00$$

### *7.2.3. Year-over-year premium growth beyond a threshold*

Rapid growth, which is linked to the acquisition of another entity, the acquisition of a block of business through assumption reinsurance, new lines of business or changes to existing products or underwriting criteria, can create additional pressures on people and systems. Companies with premium growth beyond a 20% threshold are subject to additional capital requirements for operational risk.

The premium growth requirement is calculated using gross premiums received, i.e. direct premiums received on insurance contracts issued plus premiums received for reinsurance contracts issued. For the purposes of this section, premiums received for reinsurance contracts issued arising from intra-group pooling arrangements (i.e. $\boldsymbol{P_{aig}}$) are excluded from gross premiums received. A 2.50% risk factor applies to the total amount of premiums received in the past 12 months above the 20% growth threshold compared to the premiums received for the same period in the previous year.

- For example, assume that as a result of rapid growth, gross premiums received increase by 50% from $100 to $150. The amount above the 20% increase ($30) is subject to an additional risk factor of 2.50%.

In the case of an acquisition, the total gross premiums received for a prior reporting period (before the acquisition) is the sum of the gross premiums received by the two separate entities, i.e. the sum of the acquiring and the acquired companies' gross premiums received.

- For example, assume that in Year T a company A with gross premiums received of $100 for the 12 months period ending December 31, Year T-1 acquired a company B with

gross premiums received of $50 for the same period. The merged company reported a total of $225 in gross premiums received for the 12 months period ending December 31, Year T. The capital requirement for operational risk associated with rapid growth in premiums would be calculated as follows:

$$2.50\% \times [225 - ((100 + 50) \times 1.20)] \text{ or } 2.50\% \times \$45 = \$1.13$$

### *7.2.4. Cap on operational risk margin*

A 30% cap serves to dampen the operational risk margin for companies that have high-volume/low-complexity business. The 30% cap is calculated in relation to total capital required, before the operational risk margin and diversification credit.

# Chapter 8. Diversification Credit

Because losses arising across some risk categories are not perfectly correlated with each other, a company is not likely to incur the maximum possible loss at a given level of confidence from each type of risk simultaneously. Consequently, an explicit credit for diversification is permitted between the sum of credit and market risk requirements, and the insurance risk requirement so that the total capital required for these risks is lower than the sum of the individual requirements for these risks.

## 8.1. Risk Aggregation and Diversification Credit

The diversification credit is calculated using the following formula:

$$\textit{Diversification credit} = A + I - \sqrt{A^2 + I^2 + 2 \times R \times A \times I},$$

where:

***A*** is the asset risk margin, which is the sum of capital required for:

- credit risk, including requirements for balance sheet assets and off-balance sheet exposures, and collateral for unregistered reinsurance and self-insured retentions;
- market risk, including interest rate risk, foreign exchange risk, equity risk, real estate risk and other market risk exposures.

***I*** is the insurance risk margin, which is the sum of capital required for:

- liability for incurred claims;
- unexpired coverage;
- unregistered reinsurance exposures; and
- earthquake and nuclear catastrophes.

***R*** is the correlation factor between *A* and *I*, equal to 50%.

-END-

# Guideline

**Subject:** **Own Risk and Solvency Assessment**

**Category:** **Sound Business and Financial Practices**

| | | | |
|---|---|---|---|
| **No:** | **E-19** | **Date:** | **December 2017** |
| | | **Effective Date:** | **January 1, 2018** |

This guideline sets out OSFI's expectations with respect to the Own Risk and Solvency Assessment (ORSA) of federally regulated insurers (insurer).[1]

The ORSA should reflect an insurer's own risk and solvency assessment. OSFI expects an insurer to have processes in place to conduct an ORSA that is proportionate to the nature, scale and complexity of its business and risk profile.

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[1] Insurer refers to federally regulated insurers including Canadian branches of foreign life and property and casualty companies, fraternal benefit societies, regulated insurance holding companies and non-operating insurance companies.

## I. Introduction

This guideline outlines OSFI's expectations with respect to an insurer's own assessment of its risks, capital[2] needs and solvency position, and for setting Internal Targets[3], based on an insurer's Own Risk and Solvency Assessment (ORSA).

The ORSA should serve as a tool to enhance an insurer's understanding of the interrelationships between its risk profile and capital needs. The ORSA should consider all reasonably foreseeable and relevant material risks, be forward-looking and be congruent with an insurer's business and strategic planning.

As the ORSA is a dynamic forward-looking process, stress and scenario testing should be an important component used in an insurer's determination of its own capital needs and as it sets and evaluates the adequacy of its Internal Targets and operating capital level throughout the business cycle.

This guideline addresses the scope of the ORSA, its relation to enterprise risk management, the role of Senior Management[4]and other participants in performing, monitoring, reporting or reviewing the ORSA, and other key elements of the assessment process.

OSFI, in its normal course supervisory monitoring, may review the company's ORSA including related documentation and reports. OSFI will consider this information in its assessment of inherent risks and risk management practices. OSFI does not approve an insurer's ORSA.

For further guidance and considerations about the identification, assessment, management and other aspects of risk, insurers may also consult other OSFI guidelines or publications such as: *Supervisory Framework*, Guidelines *B-2: Large Exposure Limits, Investment Concentration Limit for Property and Casualty Insurance Companies* and Guideline B-3: *Sound Reinsurance Practices and Procedures.*

For further guidance and considerations about stress and scenario testing, insurers may also consult sources such as OSFI's Guideline E 18: *Stress Testing* and actuarial standards of practice with respect to an insurer's Financial Condition Testing (FCT).

[2] With respect to Canadian branches of foreign insurers, the term "capital" in this guideline includes the parallel concept of "margin of assets over liabilities".

[3] Guideline A-4: *Regulatory Capital and Internal Capital Targets* outlines OSFI's expectations with respect to Internal Targets.

[4] For foreign company branch operations in Canada, OSFI looks to the Chief Agent to oversee the management of the branch.

## II. Scope

OSFI expects the ORSA to be tailored to and cover the consolidated operations of an insurer. An insurer's capital assessment should consider the risks of its domestic and foreign operations as well as group risks. It should also consider the availability of capital and assets in each jurisdiction for on-going viability and for the protection of policyholders and creditors of each insurance entity.

The ORSA can be prepared either on an individual insurer basis or on a group basis (Group ORSA). Where the Group ORSA includes, in addition to the consolidated operations of an individual insurer, the operations of other related insurers or the operations of its parent or home office, it should give adequate consideration to the business and risk profile of the individual insurer and the particular circumstances of the relevant markets in which it operates (e.g. by using relevant subsets of group data and modified methodologies, tools and/or assumptions) to yield own capital needs and Internal Targets that are appropriate for the individual insurer. The components of the Group ORSA that are used in or otherwise support an individual insurer's ORSA should be consistent with the expectations of this guideline.

When an insurer's business and risk profiles or circumstances are not adequately reflected in a Group ORSA, or its own capital needs and Internal Targets are not adequately determined or supported using a Group ORSA, OSFI expects the insurer to have a separate ORSA that covers only the consolidated operations of the insurer and not the operations of its parent, home office or other related insurers.

## III. ORSA and Enterprise Risk Management

In conducting its ORSA, an insurer should determine its own capital needs and establish its Internal Targets based on an internal assessment of all material risks, including the results of the enterprise risk management process[5]. The existence of a robust enterprise risk management framework enhances the ability of an insurer to effectively reflect risks in its ORSA.

Enterprise risk management, along with related controls and governance mechanisms, and the ORSA should be well integrated so that the information, analysis and results from both processes are consistent. The same is true for other processes that either feed into the ORSA or are impacted by ORSA results.

[5] For further guidance on enterprise risk management, refer to OSFI's sound business and financial practices guideline: *Corporate Governance*.

## IV. Key Elements

The ORSA should contain, at a minimum, certain key elements and considerations, including:

I. Comprehensive Identification and Assessment of Risks

II. Relating Risk to Capital

III. Oversight

IV. Monitoring and Reporting

V. Internal Controls and Objective Review

There is no single correct approach to an ORSA, and one approach will not fit all insurers. Therefore, these key elements and considerations are broadly stated and it is understood that the manner with which some of these elements are integrated in an insurer's ORSA may vary by company.

### Comprehensive Identification and Assessment of Risks

An insurer's ORSA should identify, define and assess the materiality of all known, reasonably foreseeable, emerging and other relevant risks that may have an impact on an insurer's ability to continue operations, in both normal and stressed situations. An insurer's identified risks are expected to evolve as its business activities and environment evolve.

The assessment should include all material risks, whether these are explicitly captured in the regulatory capital framework or not, as well as risks that are not easily quantifiable.

Some risks can be broken down into other more discrete risks and may take different forms depending on the nature of the business and activities of an insurer. The ORSA should give proper consideration to non-material risks that, when combined with other non-material risks, become material. For example, risk categorisation or break down should not produce a lower assessment of own capital needs that would otherwise result if related risks were combined or aggregated.

Insurers should document underlying assumptions, processes and key considerations with regard to the drivers, the assessment, measurement and mitigants in place for each risk. The appendix *Supplementary Risk Considerations* includes other risk identification and assessment considerations.

### Relating Risk to Capital

As part of its ORSA, an insurer is expected to set Internal Targets. These should normally be determined without undue reliance on regulatory capital measures.

Before an insurer gives consideration to external constraints, Internal Targets should be, first and foremost, based on an insurer's assessment of its own capital needs. For example, Internal Targets should normally not be determined by simply adding a margin on the Supervisory Targets. However, as stress and scenario testing should be an integral part of an insurer's process

for determining its Internal Targets, consideration of the results of these tests may cause an insurer to add explicit capital cushions/buffers to complement its initial assessment of own capital needs and set its Internal Targets so it can withstand a specified level of losses without falling below the Supervisory Targets[6].

*Nature, Scale and Complexity*

The ORSA is an internal assessment process, tailored to an insurer's own view of its risk profile and appetite, and reflective of the nature, scale and complexity of the insurer.

Insurers are expected to use more sophisticated methods to estimate the amount of own capital needed for material complex risks they take on or are exposed to. For less material and less complex risks, or for those that are not readily quantifiable, insurers may opt for simpler quantitative analysis (e.g. generally accepted prudent factors or extremely severe but plausible deterministic stress scenarios) combined with well documented qualitative considerations, and incorporate these amounts into their overall assessment of capital adequacy.

*Determining Own Capital Needs*

In conducting an ORSA, insurers should determine whether or not, for each risk, an explicit amount (quantity) of capital should be held and how the results for each risk should be aggregated. In doing so, insurers' own capital assessments will reflect their choice of data sets, distributions, measures, confidence levels, time horizons, valuation approaches, financial tools and methodologies, appropriate to their unique profile.

The approaches and tools used should be calibrated to determine the total amount of capital needed to cover extremely severe losses. Aggregated, these losses should represent the insurer's total quantity of capital that it needs to absorb the losses and be left with an equal amount of assets and liabilities.

Insurers are expected to consider publications and professional and other research materials dealing with quantification of risks and risk mitigants such as:

- Regulators, consulting firms, professional and other associations, academia, credit rating agencies and other purveyors of research, data, models and publications relating to the measurement of risks and risk mitigants;
- Empirical data, evidence and studies of the different and varying manifestations of historical and potential new risks in different markets for similar and dissimilar business activities and products;
- Developments in the insurance, financial and other markets and their potential impact on the continued appropriateness of current measurement tools, data and assumptions used by the insurer;

[6] Supervisory Target capital levels are not applicable to regulated insurance holding companies and non-operating insurance companies.

- Benchmarking exercises with respect to risk measurement and mitigation tools and their results, whether in the insurance sector or in other sectors where similar risks exist.

When giving consideration to various methodologies, tools or resulting factors, insurers should consider, among other things, that these may be calibrated using a confidence level/time horizon that is different from what the insurer desires, calibrated at an unspecified confidence level/time horizon or designed for a different purpose (e.g. scenario and stress testing can be used to gain a better understanding of risks and identify potential management actions that an insurer can take or its ability to continue to meet regulatory requirements during a stressful event). In these cases, the insurer should make adjustments to the methodology, tool or resulting factor so that the ORSA results are appropriate for determining its own capital needs.

When discrete methods (e.g. sensitivity testing, statistical analysis) are used for determining own capital needs with respect to individual risks, the assessment may not identify or measure dependencies or inter-relations that cause some risks to be greater in the presence of other stresses to other risks. To complement the assessment of individual risks, other tools (e.g. stochastic models or multi-dimensional deterministic scenarios of extremely severe but plausible past, potential or theoretical events) may be used to uncover potential impacts that are due to concentrations, dependencies and interactions between risks. The appendix *Supplementary Risk Considerations* includes other considerations for relating risks to own capital needs.

*Setting Internal Targets*

Once an insurer has determined its own capital needs, these initial results should be assessed to determine if they are appropriate in relation to external or third party capital expectations[7], including OSFI's expectation that Internal Targets exceed Supervisory Targets[8].

In setting Internal Targets, an insurer should assess the adequacy of its Capital Resources for supporting its current risk profile, and enabling it to continue its current operations[9] in the normal course, under varying degrees of stress and under a wind-up scenario.

Therefore, in addition to the process described above to determine an insurer's own capital needs, an insurer should also consider the impact of a range or series of adverse scenarios (e.g. an economic downturn) of varying nature or severity and its ability to avoid supervisory interventions (i.e. not fall below its Supervisory Targets) or continue as a going concern (i.e. not fall below the Minimums[10]). The results of stress testing per OSFI's Guideline E-18: *Stress Testing*, along with other single and combined forward-looking stress and reverse stress tests, including an insurer's Financial Condition Testing (FCT) scenarios, can be directly incorporated, referenced or otherwise used in the ORSA for setting an insurer's Internal Targets.

[7] For example: securities, insurance or other regulators and credit rating agencies.
[8] As outlined in Guideline A-4: *Regulatory Capital and Internal Capital Targets*.
[9] In determining capital needed to support an insurer's current risk profile and for continuing its current operations, it is expected that an insurer would, for example, assume that its current capital needs include any amount required to support short-term insurance contract renewals at the current business level.
[10] As defined in Guideline A-4: *Regulatory Capital and Internal Capital Targets*.

As outlined in OSFI's Guideline A-4, while all insurers are expected to determine an Internal Target of total capital, life insurers are expected to also determine an Internal Target of core capital. Core capital should serve to reduce the likelihood of insolvency, both in normal times and during periods when the insurer is under stress. When setting a core capital Internal Target, a life insurer should consider its target capital composition/mix and its assessment of the characteristics and quality of Capital Resources.

With respect to Canadian branches of foreign insurers, the determination and assessment of the composition of the margin of assets over liabilities may not include all of the same considerations that are relevant for determining and assessing the quality of capital instruments needed or issued by insurers if the branch does not raise capital within Canada. However, the ORSA should include many of the same considerations with respect to the quality of the assets vested in trust in Canada and other assets under the control of the Chief Agent in Canada that support the liabilities in Canada and how these are recognized and valued for capital adequacy purposes.

*Integration with Other Business Processes*

The ORSA is a forward-looking process. It should be consistent with an insurer's strategic and business planning and should contemplate the potential adverse capital impacts over an insurer's planning horizon (e.g. 3 to 5 years). An insurer's ORSA process should be consistent with and linked to the enterprise risk management and other management processes. For example, quantifiable estimates of risks that are used for ORSA purposes should be consistent with or feed into the decision making process and, where appropriate, have other business uses.

The assessment of adequacy of capital should also consider the capital needed to support an insurer's longer term business strategies and, in particular, new business and planned growth. Considering this, an insurer should determine an appropriate level or range of capitalization at which it operates, set above its Internal Targets. In determining an operating level, an insurer should consider the impact of future planned, foreseen and likely potential changes to its risk profile due to changes in its operations, its business strategy or its operating environment. For example, it should consider a series of varying adverse scenarios and, at a certain operating level, assess the insurer's ability to continue operating and not fall below its Internal Targets. It should also evaluate whether long-run Internal Targets are consistent with short-run goals, and adjust its operating levels as appropriate; recognizing that accommodating additional capital needs or additional risk mitigants can require significant lead time.

In this context, an insurer should relate its capital needs to, for example, potential changes in risks, anticipated growth, acquisitions and divestments, potential group needs and limits on fungibility/transfer of capital, plans to access external sources of capital and the level of capital desired to enable the insurer to take identified potential countervailing actions against a stress event at an acceptable cost.

All material risks, including those that are difficult to quantify in the ORSA, should be subject to internal controls. An insurer should identify relevant countervailing measures and actions that could be taken to improve its solvency position, should it be negatively impacted by economic downturns or other stress events. These may include, for example, raising additional capital,

slowing or ceasing new business, entering into reinsurance arrangements, implementing changes to product pricing and/or changes to business mix.

**Oversight**

A sound risk management and oversight process should assist an insurer in performing an effective assessment of its own capital needs, in determining its Internal Targets and in assessing the adequacy of its current and likely future solvency position. In this context, the establishment of appropriate policies, procedures, systems, controls and personnel for identifying, analysing, assessing, monitoring and measuring its risk exposures can improve the quality and effectiveness of the ORSA.

Senior Management should have a good understanding of the nature and significance of the risk exposures of the insurer, the related risk mitigants, risk management tools/techniques and oversight processes and how these relate to adequate levels of capital. Senior Management should review the appropriateness of the formality and sophistication of the methods used to quantify risks and risk mitigants as well as the risk management and reporting processes vis-à-vis the Risk Appetite Framework[11] and the general risk profile and business plans of the insurer.

The ORSA should assist the insurer in its risk assessment, risk management and planning by exploring and assessing potential threats to an insurer's capital and solvency positions. For example, the results of stress scenario tests should be used to identify actions that could be taken either to lessen the likelihood of such threats occurring or to mitigate the impact of an adverse scenario, should one actually occur.

Please refer to OSFI's *Corporate Governance Guideline* for OSFI's expectations of insurer Boards of Directors in regards to operational, business, risk and crisis management policies.

**Monitoring and Reporting**

The ORSA should be performed on a regular basis so that it continues to provide relevant information for an insurer's management processes. It should be clearly and formally documented in a report at least annually and more often if circumstances warrant, for example when there are changes to the insurer's risk profile or risk appetite.

The ORSA report should contain sufficient information about the process, underlying principles, methodologies, key assumptions, key sensitivity information and overall results relative to the risk appetite, strategic and operational plans and capital management framework of the insurer. The report should be used by the insurer to assess the appropriateness of the ORSA, including the overall results and the quality/composition of its capital, and confirm the insurer's Internal Targets.

[11] Refer to OSFI's *Corporate Governance Guideline* for additional guidance in this area.

An insurer's Senior Management should receive regular and timely reports on the insurer's risks and capital. These reports should allow Senior Management to:

- Evaluate the level and trend of material risks and their potential effect on capital;
- Evaluate the sensitivity and reasonableness of assumptions used in the risk and capital assessment and measurement process;
- Determine that the insurer holds sufficient capital in relation to established capital adequacy targets and goals (both internal and regulatory/external);
- Evaluate the adequacy of capital using stresses and scenarios;
- Assess future capital needs (e.g. dividend plans, issuance/retirement of capital instruments and capital fungibility constraints) and make any adjustments to the insurer's strategic, capital and other plans, as necessary;

The monitoring and reporting process should take into account the current and forecasted business environments and should, consistent with the risk and capital adequacy assessment, be adjusted when appropriate so that capital remains adequate during periods when the insurer is under stress and through entire business cycles.

**Internal Controls and Objective Review**

An insurer's internal control structure is essential to the quality of its ORSA. An insurer's Senior Management reviews the insurer's method for monitoring and reporting on compliance with internal policies as well as the system for assessing risks and for relating risks to the insurer's own capital needs. Senior Management should satisfy itself that the insurer's system of internal controls continues to be adequate for well-ordered and prudent conduct of business, including the quality of its ORSA process.

An insurer should conduct regular reviews of its ORSA process for integrity, accuracy, and reasonableness. Areas that should be reviewed include, among others:

- Comprehensiveness and appropriateness of an insurer's assessment process, given the insurer's nature, scale and complexity, the soundness of the controls underpinning it, and OSFI's expectations with respect to the ORSA process;
- Governance mechanisms related to the assessment and review by the insurer of group processes used in its operations, where the insurer uses a group ORSA;
- Process for identification of risks, large exposures, risk concentrations, dependencies and interactions;
- Appropriateness of the methodologies, distributions and measures and accuracy and completeness of financial and quantitative data inputs;
- Reasonableness and validity of the ORSA results, including the embedded assumptions and inputs from stress tests, scenarios, models and other methodologies and tools used in the assessment process;
- Reasonableness of the individual risk and other components and overall ORSA results;

- Consistency of the ORSA results with an insurer's risk limits and risk appetite;
- Appropriateness of the documentation that supports the ORSA and the contents of the ORSA report;
- Effectiveness of information systems that support the ORSA;
- Consistency and linkages of the ORSA process and results with the risk management, strategic, business and capital planning processes.

The ORSA, including the ORSA report, should be subject to periodic objective reviews. The objective review may be conducted by an internal or external auditor, by a skilled and experienced internal or external resource or by a skilled and experienced individual, who reports directly to or is a member of the Board.

An objective reviewer should not be responsible for nor have been actively involved in the part of the ORSA that it reviews. For example, where the internal auditor is not otherwise involved in the process, the ORSA may be included in the internal audit plan so that it is covered within the audit cycle.[12]

## V. Interaction of the ORSA with the Supervisory Review

OSFI assesses capital adequacy at multiple levels. An insurer should have sufficient capital to meet Minimum and Supervisory Target regulatory capital, as well as sufficient capital to support its risk profile, (i.e. Inherent and Net Risks of its significant activities and Overall Net Risk (ONR)) as determined through the OSFI's *Supervisory Framework*.

OSFI may review the ORSA and, upon request, the ORSA report (and/or other supporting documentation) in its assessment of the risk profile of an insurer to determine whether the ORSA is consistent with OSFI's understanding and assessment of the insurer's risk appetite and risk profile.

The depth and frequency of supervisory review of an insurer's ORSA will be proportional to the nature, scale and complexity of its activities, and the risks assumed by an insurer as assessed through OSFI's *Supervisory Framework*.

The supervisory review of the ORSA is not intended to prescribe how an insurer should perform, use or report on its ORSA. Rather, the review allows for dialogue on OSFI's assessment of inherent risk, capital and Composite Risk Rating (CRR), and of an insurer's ORSA including:

- The approach/methodology, assumptions, data and other considerations (e.g. level of confidence and rationale) supporting internal estimates of risks that are also explicitly captured in the regulatory capital guidelines;
- Risks not fully captured (e.g. concentration, contagion and aggregation of risks) and/or not explicitly captured (e.g. reputation and strategic risk) by regulatory capital guidelines;

[12] OSFI may request that a report by an objective reviewer be prepared and made available at a specific date so it can be included in a planned review of an insurer's ORSA.

- External factors, where not already considered in the previous points, including stress testing, impact of economic cycles and other external risks;
- The level and quality of the insurer's capital, and the quality of the assessment by the insurer using a range of stress scenarios included or referenced in the ORSA;
- Limitations of the insurer's ORSA;
- Other regulatory requirements and expectations or market considerations;
- Identification of best practices and potential gaps arising from a cross-sector review of ORSA;
- How and to whom ORSA related information is communicated and how ORSA issues or limitations are shared with users and appropriately elevated to relevant parties within the insurer.

In addition to quantitative efforts, OSFI understands and expects that expert judgement will be necessary to operationalize an insurer's assessment and measurement of risks and to integrate those results into the overall assessment of own capital needs and the determination of Internal Targets. The ORSA is a process and a tool that OSFI expects will be used to support insurers risk and capital assessment, on-going management, governance and other decision making activities; therefore, both the quantitative and the qualitative aspects of the ORSA are equally important.

– END –

## Appendix – Supplementary Risk Considerations

The risk considerations contained within this appendix do not constitute an exhaustive list of exposures and factors that insurers should consider for purposes of the ORSA and for establishing Internal Targets. Rather, they provide some examples that may be relevant for a particular insurer and that may be used when exploring and assessing risks in the context of the ORSA.

### Comprehensive Identification and Assessment of Risks

*Emerging/Evolving risks*

Certain risks may be identified based on possible new developments or emerging trends in the internal or external environment. While some may have been reviewed and found to be non-material, others may not have yet been defined or evaluated. Also, risks that were once considered immaterial may become material as the insurer's environment changes.

The ORSA should consider how risks may evolve and what measurement and management techniques are required for monitoring purposes.

*Risk transfer/Mitigation activities*

Insurers should be cognizant of any risks that may exist within certain risk transfer or risk mitigation activities (such as reinsurance, hedging or securitization transactions), and how these would behave under stress conditions. Resulting new or additional risks such as credit/counterparty and operational risk should be taken into consideration.

*Cross border activities*

Insurers that operate in multiple jurisdictions or otherwise engage in cross border investments and transactions with foreign counterparties may be subject to increased risk including: country risk, concentration risk, foreign currency risk (market risk) as well as regulatory, legal, compliance and operational risks. Laws and regulators' actions in foreign jurisdictions could make it much more difficult to realize on assets and security in the event of a default.

An insurer's ORSA should consider these types of activities and assess the controls, capital or assets needed in support of the regulatory, legal and compliance risks associated with concentrations in cross border activities. If an insurer has operations in foreign jurisdictions where restrictions on fungibility or access to capital apply (or could apply), where there is potential ring-fencing of funds, or where minimum/target regulatory capital requirements exceed levels in Canada, this should also be clearly identified and taken into account in setting both group-wide capital needs and Internal Targets for individual insurers.

### Relating Risk to Capital *(Determining Own Capital Needs)*

This guideline does not provide a list of available approaches, methodologies or tools. As a result ORSA practices across insurers are likely to vary. For example, some insurers may:

- consider that their assessment of a material complex risk or set of risks would be best performed through the use of sophisticated internal models;
- determine that developing complex internal models for a material complex risk, although desirable, is not feasible and, as a result, select somewhat simpler, less refined approaches and compensate with more prudent assumptions that nonetheless yield reasonable estimates of own capital needs;
- expend considerable effort to develop an advanced methodology to assess a specific complex risk which they believe will give them a competitive advantage in the market and allow for improved capital allocation;
- choose to rely heavily on qualitative considerations, including expert judgement, for risks that are difficult to quantify and for which measurement results vary significantly depending on the approach and method used;
- develop complex methodologies to aggregate results and estimate the capital needs for concentrations, dependencies and risk interactions along with prudent benefits of diversification;
- choose a simple aggregation approach producing cruder results that achieve little or no diversification benefits.

*Aggregation/Diversification Adjustment*

Where risk aggregation/diversification adjustment benefits are applied in an insurer's ORSA, they should be validated and calibrated by the insurer on a regular basis. Insurers should be prudent in their assessment of aggregation/diversification benefits and should consider whether such benefits exist in periods of stress. When giving consideration to the benefits of diversification, equal consideration should be given to the potential concentrations, dependencies and interactions of risks that may cause the total impact to be greater than the sum of the impact of the risks considered individually.

*Concentrations, Dependencies and Interactions of Risks*

Situations in which risk concentrations, dependencies and interactions can arise include, among others, exposures to:

- one or many severe or extremely severe events/scenarios and their knock-on effects;
- a series of many small events/scenarios or individual claims and their knock-on effects;
- a common cause across many underwriting years (e.g. asbestos, pollution, etc.);
- one or very few reinsurers or other counterparties, or connections between counterparties;
- one or very few products/lines of business or sources of business/assets;
- geographical regions.

Risk concentrations, dependencies and interactions can arise through a combination of exposures across these and other broad categories. An insurer should have an understanding of its insurance, market, credit and other risk concentrations, dependencies and interactions resulting from exposures within and across its different business lines.

Office of the Superintendent of Financial Institutions Canada
Bureau du surintendant des institutions financières Canada

# OFFICE OF THE SUPERINTENDENT OF FINANCIAL INSTITUTIONS

## PROPERTY AND CASUALTY MEMORANDUM TO THE APPOINTED ACTUARY

**2021**

OSFI
BSIF

Canada

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# 1. OVERVIEW

This Memorandum describes the requirements of the Office of the Superintendent of Financial Institutions (OSFI or Superintendent) with respect to the Appointed Actuary's Report (AAR) specified in subsection 667(2) of the *Insurance Companies Act (ICA).* It sets out the minimum standards used in determining the acceptability of the AAR and provides guidance for the Appointed Actuary preparing reports in matters relating to presentation, level of detail and nature of the discussions to be included.

Many insurers are required to file an AAR, as part of the Annual Return forms, with more than one regulator, federal or provincial, in Canada. The insurer is responsible for ensuring that the AAR submitted as part of the Annual Return complies with the requirements of each regulator.

The term AAR refers to the detailed actuarial report submitted to a regulator. This includes the opinion of the Appointed Actuary concerning the fairness and adequacy of the policy liabilities included in the insurer's financial statements, a detailed commentary, data exhibits and calculations supporting that opinion.

The AAR comprehensively documents the work done by the Appointed Actuary to calculate policy liabilities. OSFI views the AAR as a key component of its review of the company's financial position and profile.

The AAR is not solely a report from the company's Appointed Actuary to OSFI's actuaries. It is also intended for company management and is read by regulators who may not be actuaries but who are knowledgeable about insurance. Therefore, the AAR should be presented in a manner generally understandable to both company management and the regulator.

# 2. REGULATORY REQUIREMENTS

## 2.1 Application of Professional Standards to the Appointed Actuary's Valuation

Subsections 365(2) and 629(2) of the ICA require that "The actuary's valuation shall be in accordance with generally accepted actuarial practice with such changes as may be determined by the Superintendent and any additional directions that may be made by the Superintendent."

OSFI's Guideline E-15 *Appointed Actuary: Legal Requirements, Qualifications and Peer Review* describes the role of the Appointed Actuary and sets out some of OSFI's expectations with respect to that role. The guideline also outlines the actuary's qualification required to carry out the Appointed Actuary's role.

The Canadian Institute of Actuaries (CIA) annually issues a letter (the Fall Letter) from the Committee on Property and Casualty Insurance Financial Reporting (PCFRC) and, from time to time, may issue other educational notes. While the Fall Letter and educational notes are not standards, the Appointed Actuary should disclose when either the educational notes and/or the PCFRC Fall Letter are/is not followed as well as the supporting justification.

For purposes of the Appointed Actuary's valuation of policy liabilities (and the associated opinion), OSFI currently accepts that work performed in accordance with "accepted actuarial

practice" in Canada (as defined by the CIA) is sufficient to satisfy the 'generally accepted actuarial practice' requirement referred to in the ICA sections identified above. "Accepted actuarial practice" is defined by the professional actuarial standards of practice promulgated by the Actuarial Standards Board (ASB), together with the additional requirements and directions of this Memorandum. Any deviations from CIA Standards of Practice or from the additional requirements of this Memorandum must be reported in the AAR and justified.

This Memorandum for 2021 year-end financial reporting does not contain any requirements that override or limit accepted actuarial practice.

In complying with accepted actuarial practice, the Appointed Actuary must meet a standard of care with respect to the data used in valuations. This standard of care, implicitly stated in the CIA Standards of Practice, requires the Appointed Actuary to establish suitable check procedures for the verification of data. While the CIA Standards of Practice (SOP Subsection 1520) offer the Appointed Actuary the option to consider the Auditor's work, the existence of the Joint Policy Statement does not override the ICA's requirement for filing reports with the Annual Return that meet the standard of care implicitly stated in the CIA Standards of Practice. The AAR must discuss the extent to which the Appointed Actuary considers the work of the Auditor. Where the Appointed Actuary uses the work of the Auditor, the details of the Auditor's work should not be addressed in the AAR. If there are instances where the Appointed Actuary does not use the work of the Auditor because of any special circumstances, this must be disclosed in the data section of the AAR. The Appointed Actuary should describe the data verification that was performed.

The CIA Standards of Practice (SOP Subsection 1510) describe the Appointed Actuary's use of another person's work. Such use of the work of others should be disclosed in the section of the AAR where it most logically applies (e.g., at the company level, a specific product level, etc.).

## 2.2 Filing Directions for the AAR, FCT Report and Peer Review Report

The filing deadlines for the above reports are:

- AAR - no later than 60 days after the end of the fiscal year,
- FCT Report - the earlier of 30 days after the presentation to the Board of Directors, Audit Committee or Chief Agent and one year after the fiscal year end,
- Peer Review Report (full 3-year review or the limited annual review) - Copies of pre-release reports (encouraged), both the full peer review report, and any summary, for financial statement work should be forwarded to OSFI based on the same deadlines that apply to filings of the P&C regulatory financial returns.
- For post-release reviews, the reviewer's report should be submitted to OSFI no later than thirty days after release of the AA's report on the work reviewed, and for future financial condition reports, no later than December 31.

OSFI's Guideline E-15 *Appointed Actuary: Legal Requirements, Qualifications and Peer Review* provides more details on filing deadlines.

For the AAR, the FCT Report and the Peer Review Report, the company must submit one electronic copy uploaded via the Regulatory Reporting System (RRS). A scanned copy of the signed opinion must be included in the electronic submission. **Failure to meet the**

**deadlines of the filings will result in a penalty fee under OSFI's Late and Erroneous Filing Penalty Framework.**

For security reasons, companies should not file reports through e-mail. The file should be in PDF format and preferably created with a PDF software rather than through scanning, as the former is searchable while the latter is not. The information should be easily copied by OSFI staff from the AAR, the FCT or the Peer Review Report. Therefore, the reports should not be security protected and exhibits should be in a format that can easily be transferred to a spreadsheet. Otherwise, the company should be prepared to promptly provide searchable data in an alternative media upon request.

With the exception of some companies, OSFI does not require hard copies of the AAR. Companies required to provide hard copies will be contacted individually.

Companies should follow the file naming conventions outlined in the instructions for Unstructured Financial Returns. Both the full 3-year review and the limited annual review share the same naming conventions.

The filing instructions may be obtained on the OSFI website at www.osfi-bsif.gc.ca under *Regulatory Data and Returns / Filing Financial Returns / Canadian & Foreign Property and Casualty Insurance Companies*.

In order to file a Peer Review Report within RRS, companies are reminded that these filings must first be requested by contacting ReturnsAdmin@osfi-bsif.gc.ca or by calling 613-991-0609.

The ICA requires companies to file their AAR with their Annual Return. OSFI will not accept a certificate containing only the opinion of the Appointed Actuary in lieu of a full AAR.

Companies are reminded that the filing of AARs and opinions with the P&C Return requires that each copy of the P&C Return filed with OSFI should contain a properly signed copy of the AAR.

**Note that Section 7.5 requires a separate cover letter for Disclosure of Compensation.**

## 2.3 Differences (if any) Between the Appointed Actuary's Valuations and Corresponding Annual Return Liabilities

Companies are expected to book the Appointed Actuary's estimated policy liabilities in the Annual Return. In circumstances where the booked gross, ceded or net policy liabilities differ from the estimated policy liabilities by more than the Appointed Actuary's selected standard of materiality, the AAR must describe the reasons for the differences.

**For federally regulated companies, the provision for policy liabilities in the liabilities shown in the balance sheet of the Annual Return should be greater than or equal to the corresponding estimated policy liabilities on a discounted basis including PfAD calculated by the Appointed Actuary.**

## 2.4 Persons Signing the Appointed Actuary's Report

The AAR must be signed by the Appointed Actuary, who must be a Fellow of the CIA.

# 3. OSFI'S REVIEW PROCESS

OSFI recognizes the confidential nature of the AAR. Reviews of the filed Annual Returns may disclose that an Appointed Actuary's valuation warrants further assessment and questioning. The Superintendent may reject assumptions and methods where it appears that the policy liabilities produced are inappropriate.

Since the review of an AAR may take place over an extended period after filing, OSFI may request the Appointed Actuary to provide supplemental detail to sufficiently assess the assumptions and methods. The Appointed Actuary is expected to respond promptly to all supplemental requests. Working papers required to support the computation of the policy liabilities reported in the Annual Return and the AAR should be available at all times and should be made available to OSFI upon request.

Where the appropriateness of particular assumptions or methods is not sufficiently demonstrated, the Superintendent will require the Appointed Actuary to choose other acceptable assumptions or methods, and to re-compute the policy liabilities. In such a situation, the Appointed Actuary must re-file the AAR. The Superintendent may also require the company to amend the Annual Return. Alternatively, the Superintendent may ask the company to reflect the changes in the Annual Return for the following year. The Superintendent may request a report from an Independent Actuary.

# 4. SPECIAL LINE OF BUSINESS CONSIDERATIONS

## 4.1 Marine Insurance

Marine insurance business, if transacted, must be included within the scope of the AAR. The AAR should clearly identify the Appointed Actuary's provisions for marine insurance.

## 4.2 Title Insurance

Premiums for title insurance are earned at issue. Unearned premium reserves are therefore not usually required. The accident date for all claims is the issue date of the policy as most problems with the title that could cause a claim would be in existence at the issue date of the policy.

## 4.3 Accident and Sickness Insurance

This Memorandum does not deal specifically with accident & sickness insurance valuation.

Companies and their actuaries preparing reports on accident and sickness business should refer to OSFI's *Memorandum to the Appointed Actuary on the Report on the Valuation of Life Insurance Policy Liabilities*. The opinion described later in this document, included in the AAR, should cover these related provisions.

# 5. FORMAT OF THE APPOINTED ACTUARY'S REPORT

## 5.1 Report Outline

While the format of the AAR differs from Appointed Actuary to Appointed Actuary, most AARs include sections similar to the following:

- Introduction
- Expression of Opinion
- Supplementary Information Supporting the Opinion
- Executive Summary
- Description of Company
- Data
- Claim Liabilities
- Premium Liabilities
- Other Liabilities
- Other Disclosure Requirements
- Unpaid Claims and Loss Ratio Analysis Exhibit
- Exhibits and Appendices

In Section 6 “Contents of the Appointed Actuary’s Report”, the above outline is used to discuss the required contents. The Appointed Actuary is encouraged to use the above outline.

## 5.2 Table of Contents

A table of contents showing where the above information is located must be included at the beginning of the AAR. The AAR must also include a table of contents for the Exhibits and Appendices.

To facilitate the review, the AAR should include clearly identified sections and numbered pages. Reference to such pages should be part of the table of contents.

# 6. CONTENTS OF THE APPOINTED ACTUARY’S REPORT

## 6.1 Introduction

This section should identify the scope of the AAR and should indicate clearly that the AAR is an actuarial valuation report or supports an actuarial opinion. This section should also identify:

- the company involved,
- the date of valuation,
- the identity of the author,
- the author's full address and telephone number, and
- the author's authority for preparing the AAR.

## 6.2 Expression of Opinion

The Appointed Actuary must use the prescribed opinion format (see Appendix I). The opinion wording is as recommended in the CIA Standards of Practice – Practice-Specific Standards for Insurers. OSFI will consider any opinion that varies from this wording to be a qualified opinion.

Note that:

- **The liability figures carried by the company in the Annual Return must be stated in the opinion.**
- **The liability figures derived by the Appointed Actuary must be stated in the opinion.**

This section must contain an original signature of the Appointed Actuary, the Appointed Actuary's name in type, the date and location of signing.

The actuarial opinions presented to the shareholders and policyholders of the company should be essentially the same as the opinions filed with OSFI. Should this not be the case, the Appointed Actuary must disclose in writing to OSFI the material differences between the opinions, as well as the rationale for such differences.

Any qualification or limitation concerning any aspect of the valuation should be noted in this section of the AAR. These qualifications or limitations should be similar to the ones included in the opinion for Canadian Annual Returns presented to the shareholders and policyholders. Caveats or any form of disclaimer should be excluded from the opinion but could be included in Section 6.3 "Supplementary Information Supporting the Opinion".

For branches where the External Auditor Report is not available at the time the Appointed Actuary has to render his/her opinion**, a qualified opinion, conditional upon receiving an unqualified opinion from the External Auditor (Auditor), must be issued. The expected completion date of the External Auditor's work should be stated. When the auditor's work is completed, the Appointed Actuary must either:**

a. **file an unqualified opinion with OSFI, or**
b. **file a revised opinion with a supporting AAR issued if the Auditor is unable to give an unqualified opinion or modifies the financial statements.**

## 6.3 Supplementary Information Supporting the Opinion

Reader of the AAR should be able to understand how the Appointed Actuary's figures, as shown in the opinion, are derived. This section should contain references to the report sections, exhibits and/or appendices where these results are derived or summarized. Where results from several places must be added together, a table should be included.

This section should also include any conditions or limitations pertaining to the policy liabilities.

Consolidated reporting will be required within the P&C Returns. For capital purposes, the consolidated entity includes the parent company and all subsidiaries that carry on business that the parent could carry on directly pursuant to the *Insurance Companies Act*.

The above rule does not apply to life company subsidiaries, which are to be reported using the equity method. OSFI anticipates that most Actuaries will continue to prepare non-consolidated AARs. However, the Appointed Actuary must include an additional exhibit and commentary that reconciles the information within the AAR to the consolidated opinion. Actuaries will be expected to value non-federally regulated subsidiaries under Canadian generally accepted actuarial practices and include these AARs as appendices or as a separate part of the AAR.

## 6.4 Executive Summary

The actuary must briefly explain and comment on in this section as well as in detail in all the other sections of the report where it is relevant the impact that the COVID-19 pandemic has had for the insurer and the adjustments that were made in this year's policy liabilities valuation to take it into account. For this purpose, the actuary may refer, among others, to the document 2021 Guidance to P&C actuaries: Special considerations due to COVID-19 which is available on the website of the Canadian Institute of Actuaries.

This section should contain a summary of the key results and findings and any other information the Appointed Actuary wishes to bring to the attention of the reader. In particular, it should comment on the comparison of the actual experience with the expected experience in the prior year end valuation for all lines combined.

It should also reference any significant changes in methods or assumptions from the prior AAR, significant issues and how they were resolved, data or other concerns identified by the Appointed Actuary and any other unusual circumstances identified as part of the valuation. **This section must also include any deviation from CIA Standards of Practice or from the requirements of this memorandum.**

## 6.5 Description of Company

### 6.5.1 Ownership and Management

The Appointed Actuary should provide a brief history of the company covering ownership and senior management. Changes over the past several years should be identified and potential impacts on the valuation as a result of these changes should be discussed.

### 6.5.2 Business

This section should contain a brief description of the lines/classes of business written, distribution channels and geographic distribution. It should also describe recent changes in business written, underwriting policies, claims policies and procedures as well as the impact of these changes.

### 6.5.3 Reinsurance

6.5.3.a Reinsurance Arrangement

The Appointed Actuary should describe the company's reinsurance arrangements (type of arrangements, significant terms and conditions, order of application of treaties, and whether the arrangements are specific to the Canadian operations only) and any changes in the arrangements (including changes in retention or limits) during

the experience period used in the AAR. This description should be included for all years where the ceded unpaid claims could be material. In many cases, it is useful to include the rationale for the changes (if any). In particular, the Appointed Actuary should identify whether the terms and conditions of the reinsurance/retrocession arrangements require payments to be made from the reinsurer/retrocessionaire directly to the ceding company in Canada, including in the event of the cedant's insolvency.

6.5.3.b Reinsurance Ceded

The provision for reinsurance ceded must be reduced for expected reinsurer defaults, disputes, the time value of money due to delays in payment or other reasons that could reduce the amount recoverable. This reduction is in addition to the unexpected defaults within the reinsurance margin. The AAR should clearly indicate where none of the above reductions are made to the provision for reinsurance ceded.

When making this estimate, the Appointed Actuary will not necessarily assess the financial condition of each reinsurer. However, the existence of any of the following situations and the actions taken should be described:

- a dispute has arisen with a reinsurer;
- a reinsurance collectible is significantly overdue;
- the reinsurer has a history of not settling accounts promptly;
- the reinsurer is known to have been the subject of regulatory restrictions in its home jurisdiction; or
- the reinsurer has a poor credit rating.

It is expected that the Appointed Actuary will discuss reinsurance matters with management and the Auditor of the company to determine whether there are unusual problems and/or delays expected to be encountered in collecting the relevant amounts from the reinsurers.

Where reinsurance agreements were commuted or changed, the Appointed Actuary should clearly indicate how any changed arrangements were taken into account.

6.5.3.c Financial Reinsurance Agreements

The Appointed Actuary must disclose information of any material financial reinsurance agreements ceded where there is not significant insurance risk transfer between the ceding company and the reinsurer, or where there are other reinsurance agreements or side letters that could offset the financial effect of the first reinsurance agreement. If no such agreements exist, the Appointed Actuary must state that there are no material financial reinsurance agreements. The Appointed Actuary should also describe the process used to reach the above conclusion.

The Appointed Actuary should disclose any related party reinsurance that has or could have a material impact on the policy liabilities. The disclosure should include the parties involved, a description of the reinsurance and the impact on policy liabilities.

### 6.5.4 Materiality Standards

In preparing the company's Annual Return, the company management and the Auditor routinely agree on a level of materiality. The standard of materiality applied for accounting purposes and for valuation of an insurer's policy liabilities must be reported in the AAR. In addition, the Appointed Actuary must report how the materiality standard is selected for the valuation of policy liabilities.

## 6.6 Data

The AAR should note the extent of the Appointed Actuary's review and verification of the data and the extent of the Appointed Actuary's reliance on data prepared by others. The AAR should also describe the methods and procedures used to ensure that the valuation data are sufficient, reliable and accurate.

In particular the AAR should describe the type of data provided and the review and verification procedures applied thereto and the procedures and steps undertaken to ensure that the valuation data are sufficient, reliable and accurate.

The statutory requirement that the Appointed Actuary file an AAR with the Annual Return assumes that the Appointed Actuary has met the standard of care, as implicitly stated in the CIA Standards of Practice. In particular this requires that the Appointed Actuary establish suitable check procedures to verify that the data utilized is reliable and sufficient for the valuation of policy liabilities.

In the event that the External Auditor's work is not complete when the Appointed Actuary provides his/her opinion, please refer to Section 6.2 Expression of Opinion.

With respect to any line of business (including, more specifically, accident & sickness business, pools and facility associations), the Appointed Actuary should describe 1) any reliance on or use of the work of another actuary; 2) the scope of such reliance; 3) a justification for such reliance and 4) the extent of the review of the other actuary's work should also be described.

## 6.7 Claim Liabilities

### 6.7.1 Undiscounted Claim Liabilities

The commentary on the claim liabilities must contain details of the derivation of the gross, ceded and net provisions. Normally the Appointed Actuary will calculate two of these provisions directly and derive the third by addition or subtraction. The provisions calculated directly will depend on the circumstances of the company and the preference of the Appointed Actuary; however, the individual provisions should each be reasonable.

The data, analysis and commentary will normally be provided by actuarial lines of business. These lines will be selected by the Appointed Actuary based on the credibility and homogeneity of the resulting data. Where the actuarial lines of business have changed from the prior AAR, the current year's AAR should clearly state the reasons for the changes. In some cases, it may be appropriate to use different lines of business for the ceded and gross/net provisions.

The Appointed Actuary should disclose whether or not the company has exposure to mass tort and latent claims (including potential exposure emanating from residential schools), and if the company has had a subsequent event. If the company has such exposure, the Appointed Actuary should discuss the nature and treatment of those claims in the calculation of the provisions for unpaid liabilities.

Where the actuarial lines of business do not include all the business written by the company (e.g. pools and associations), the AAR should clearly indicate the additional amounts and include them in a reconciliation exhibit.

In determining the provision for each actuarial line of business, the Appointed Actuary should consider, at a minimum:

- any significant trends in the severity and frequency of claims,
- any important changes in the coverage of the policies,
- the changes in the cost of reinsurance and/or in reinsurance arrangements,
- any changes in the lags in the reporting of claims and in the payment of claims,
- changes to the loss reserving practices and
- the effects of regulatory changes.

The commentary should discuss the existence of any significant development (adverse or favourable) in the run-off of the reserves that had been set up in prior years, reasons for the development and changes to methods and assumptions that would eliminate the recurrence of any consistent development.

### 6.7.2 Claims Expenses

Claims expenses are normally split between internal (unallocated) and external (allocated).

Some actuaries combine external expenses with incurred losses and base their analysis on the total of losses and expenses. Other actuaries calculate separate provisions for indemnity and external expenses. Both approaches are acceptable; however, the Appointed Actuary should clearly indicate the approach followed.

A variety of methods are used for internal loss expense provisions. Any method in accordance with accepted actuarial practice is acceptable. The AAR should describe the method(s) as well as any changes in methods from prior AARs. The impact of such changes should be clearly indicated and, if material, included in the Executive Summary.

### 6.7.3 Comparison of Actual Experience with Expected Experience in Prior Year-End Valuations

In order to assess the effect of changes in the estimated claim liabilities, OSFI requires companies to provide a comparison of Actual Experience with Expected Experience on an undiscounted basis for each actuarial line of business and for all lines combined for 10 years. However, if data for 10 years is not currently available, the Appointed

Actuary should comment on this fact but also move toward the 10 year standard. These comparisons must be provided gross and net of reinsurance. Normally these comparisons will include external adjustment expenses, exclude internal adjustment expenses and exclude classes of business not reviewed by the Appointed Actuary (e.g. pools).

Actual Experience refers to the ultimate gross and net undiscounted estimates selected for each accident year for each actuarial line of business valued as of the current year-end (December 31 or October 31). Expected Experience in Previous Year End Valuations refers to the ultimate undiscounted estimates selected by the Appointed Actuary at each of the prior year-ends. If the ultimate undiscounted estimates are not available for a line of business (e.g. tabular reserves), then the ultimate discounted estimates may be used. The AAR must include the total for all lines combined as well as subtotals, where useful.

Where there are changes in the actuarial lines of business, the Appointed Actuary must allocate the actual total undiscounted claim liabilities from prior AARs to the current actuarial lines of business using a reasonable approximation. For the first year following the change, the AAR should show the development using the old actuarial lines of business as well.

Where the Appointed Actuary uses underwriting/policy year rather than accident year, the Appointed Actuary may show the comparison of actual to expected experience using projected loss ratios based on underwriting/policy year data. In this case, the Appointed Actuary should estimate the dollar impact of the development. This would normally be calculated by multiplying the change in loss ratio by the underwriting/policy year earned premium at the prior year-end.

Whenever significant differences in ultimate estimates occur for any accident year, the Appointed Actuary should provide commentary explaining such changes in ultimate estimates for each accident year. In addition, the Appointed Actuary should discuss any actions taken to reduce the likelihood of similar differences in the future. The Appointed Actuary should update commentary from prior AARs based on the most recent experience. For this section, the Appointed Actuary may use a standard greater than the selected materiality standard to eliminate comments on normal fluctuations in data. A lower standard should be used for individual lines and a moderately higher standard may be used for older accident years to avoid repeating some of the less important comments from prior AARs.

**Significant differences may exist between the loss development on page 60.40 of the Annual Report and that shown in the Comparison of Actual Experience. OSFI acknowledges that the company is not required to use the AAR as a basis for completing page 60.40 and that the differences can arise from such items as the allocation of internal loss adjustment expenses, Facility Association and Other Reserves. The Appointed Actuary should inform the Company of any significant differences and include a discussion of the differences in the AAR or indicate that there are no differences.**

On a net basis, ultimate loss development is expected to be the same as that calculated by summing over columns (3) and (6) using data from the UCLR Analysis Exhibit in the current AAR compared to data in prior year AARs. The Appointed Actuary should

quantify and explain any difference that is expected due to changes to the presentation of data in the UCLR Analysis Exhibit.

### 6.7.4 Discounted Claim Liabilities

The claim liabilities must be discounted and include appropriate margins as required by CIA Standards of Practice.

The AAR should indicate the discount rate(s) used for the valuation and describe in detail the method used to select the discount rate(s). In particular, the selected discount rate(s) should be reduced by an explicit margin for expected credit-related events, including expected asset default. This deduction is in addition to the unexpected credit risks within the investment return rate margin. The Appointed Actuary should clearly document the rationale for the selections, including where the explicit margin is zero. The AAR should include all supporting exhibits.

The Appointed Actuary should quantify, disclose and justify the impact of changes in selected margins. The Appointed Actuary should also disclose in the Executive Summary cases where the impact of the changes in selected margins is material.

## 6.8 Premium Liabilities

The premium liabilities are normally calculated by line of business; however, the lines need not be identical to the actuarial lines of business used to estimate the claim liabilities.

OSFI expects the Appointed Actuary to comment on all aspects of components of premium liabilities, and particularly on the following (Please indicate if not applicable):

- expected losses, loss expenses and servicing costs on the policies in force,
- anticipated broker/agent commission,
- expected adjustments (plus or minus) to swing rated policies,
- expected changes to premiums as a result of audits, late reporting or endorsements and
- expected commission adjustments on policies with variable commissions.

The commentary should disclose whether or not the company has had a subsequent event. If there was a subsequent event, the Appointed Actuary should discuss the nature and treatment of the event in the calculation of the provisions for premium liabilities.

The Appointed Actuary should discount the premium liabilities with appropriate margins as required by CIA Standards of Practice. Where the selected interest rate or margins differ from those used in the Claim Liabilities Section, the AAR should describe the reasons for the selections.

The treatment of the above items may differ by company. The Appointed Actuary must demonstrate that the total of the carried premium liabilities is at least as large as his/her provision.

### 6.9 Other Liabilities/Other Assets

The Appointed Actuary must comment on the adequacy of reserves, including IBNR, maintained for Self-Insurance Retention (SIR) plans. SIRs represent the portion of a loss that is payable by the policyholder. The Appointed Actuary should include these in his/her opinion as "other net liabilities". They should be reported net of reinsurance, not net of the supporting assets. These supporting assets are to be included in the opinion as "other amounts to recover". The AAR should describe these provisions and provide details of their calculation.

Whenever amounts for salvage and subrogation are material, and therefore presented separately in the Annual Return, the Appointed Actuary must include such amounts in the opinion as "other amounts to recover". The AAR should describe the method used to calculate these amounts.

The AAR opinion should include, with commentary, any other amounts reported as Other Liabilities or Other Assets.

## 7. OTHER DISCLOSURE REQUIREMENTS

### 7.1 Dynamic Capital Adequacy Testing (DCAT) / Financial Condition Testing (FCT)

The AAR must disclose the following information with respect to the DCAT/FCT reporting in the last three years:

- the date on which the DCAT/FCT reports were signed by the Appointed Actuary,
- the date on which the DCAT/FCT reports were presented,
- to whom the DCAT/FCT reports were presented (e.g. full board, audit committee, chief agent),
- whether the reports were presented in person or only in written form and
- the date used as the start of the projection period in the DCAT/FCT reports.

### 7.2 New Appointment

OSFI expects Appointed Actuaries to comply with the qualification requirements contained in OSFI Guideline E-15, *Appointed Actuary: Legal Requirements, Qualifications and Peer Review*. The AAR must explicitly disclose any deviations from these qualifications, including future steps being/to be taken to meet the qualification requirements.

If the Appointed Actuary was appointed to the role during the last year, the AAR must include the following disclosures:

- the date of appointment,
- the date of resignation of the previous Appointed Actuary,
- the date on which OSFI was notified of the appointment,
- confirmation of communication with the previous Appointed Actuary, as required by the ICA section 364(1), and

- a list of the Appointed Actuary's qualifications, keeping in mind, but not limited to, the CIA's Rules of Professional Conduct.

## 7.3 Annual Required Reporting to the Board or Audit Committee

For a Canadian company, the AAR must disclose the date on which the Appointed Actuary met with the board or the audit committee of the board, as required by paragraph 203(3)(f) of the ICA.

For a foreign company, the AAR must disclose the date on which the Appointed Actuary met with the chief agent, as required by section 630 of the ICA.

## 7.4 Continuing Professional Development Requirements

The Appointed Actuary must disclose in the AAR that he/she is in compliance with the Continuing Professional Development requirements of the CIA.

## 7.5 Disclosure of Compensation

The Appointed Actuary must disclose their compensation. This disclosure is consistent with the Financial Stability Board's Principles for Sound Compensation Practices, which have been adopted by OSFI. The form of the disclosure statement should be as follows:

| Disclosure of Compensation |
|---|
| I attest that all of my direct and indirect compensation is derived using the following methodology: |
| _____ |
| _____ |
| _____ |
| _____ |
| I confirm that I have performed my duties as Appointed Actuary without regard to any personal considerations or to any influence, interest, or relationship in respect of the affairs of my client or employer that might impair my professional judgment or objectivity.<br><br>I confirm that my ability to act fairly is unimpaired and that there has been full disclosure of the methodology used to derive my compensation (and/or my firm's compensation, if applicable) to all known direct users of my services as Appointed Actuary. |

If the Appointed Actuary is an employee of the insurance company, the methodology should include a list of the major components of the Appointed Actuary's compensation. This could include: base salary, cash and/or stock-based bonuses, retirement and other significant benefits, other compensation (e.g. signing bonuses, severance packages), and perquisites (e.g. car allowances).

For each component of the Appointed Actuary's compensation listed above that varies with the performance of the company, the value of that component as a target percentage of the

base salary must be disclosed. This might include, but is not limited to, participation in a bonus plan and/or a stock option plan that is based on company performance. The company must disclose the basis used to determine the amounts of these variable compensation components.

If the Appointed Actuary serves as an external consultant to the company, then the information provided to OSFI must include:

- The consulting fees payable for the preparation of the AAR, FCT, and any other work performed as the Appointed Actuary in respect of the company's current fiscal year;
- The basis used to determine the consulting fees payable for the Appointed Actuary's work (for example, fixed fee basis, time and expense basis, as well as any caps etc.), and whether the fees include any element of incentive or results-based compensation;
- The proportion that the consulting fees payable for the Appointed Actuary's work for the company represents, as a percentage of the total revenue billed by the consulting firm's Canadian legal entity to the company in the consulting firm's prior fiscal year (<10%, 10-25%, 25-50%, 50-75%, 75%+); and
- The proportion that the consulting fees payable for the Appointed Actuary's work for the company represents, as a percentage of the total revenue billed by the consulting firm's Canadian legal entity to all clients in the consulting firm's prior fiscal year (<10%, 10-25%, 25-50%, 50-75%, 75%+).

**Due to its sensitive nature, the "Disclosure of compensation" must be included in a separate cover letter to AA Compensation Letter P&C ( aacompletterpc@osfi-bsif.gc.ca), Actuarial Division at OSFI and, on request, to other Canadian regulators with reference to the cover letter made in the relevant section of the AAR.**

## 7.6 Reporting Relationships of the Appointed Actuary

The AAR should disclose the reporting relationships and dependencies of the Appointed Actuary.

For Appointed Actuaries who are employees of the company, the AAR should disclose the name and position of the person (or persons) to whom the Appointed Actuary reports as well as any changes in this regard over the past year. Both solid line and dotted line reporting relationships should be disclosed, as well any anticipated change.

When the Appointed Actuary is not an employee of the company, the AAR should disclose the names and positions of the main contacts within the company with respect to the different functions of the Appointed Actuary, such as the valuation, FCT, and MCT support (if any).

For example, the AAR should disclose the name and position of:

- The person who hired the Appointed Actuary; and
- The company employees with whom the Appointed Actuary discusses findings and reports.

## 7.7 Peer Review of the Work of the Appointed Actuary

OSFI requires the work of the Appointed Actuary to be externally peer reviewed, as set out in OSFI's Guideline E-15, *Appointed Actuary: Legal Requirements, Qualifications and Peer Review*.

For each Peer Review Report filed in the last three years, the Appointed Actuary must complete the following table:

| | AAR | | | DCAT/FCT | | |
|---|---|---|---|---|---|---|
| (a). Accounting period for work reviewed | 2021 | 2020 | 2019 | Y* | Y-1 | Y-2 |
| (b). Peer reviewer name | | | | | | |
| (c). Work reviewed and nature of the peer review (e.g. full 3-year or limited annual) | | | | | | |
| (d). Peer reviewer date signed | | | | | | |
| (e). Date submitted to OSFI | | | | | | |
| (f). Date submitted to Audit Committee or Chief Agent | | | | | | |
| (g). Whether the Peer Review Report was issued pre-release or post-release | | | | | | |
| (h). Year of next full 3-year review | | | | | | |
| (i). Next peer reviewer (if known) including the plan and the name of the next reviewer | | | | | | |
| (j) End year for last 6 year cycle to change reviewer | | | | | | |

*Y = the most recent year.

In addition, the AAR should indicate when the peer reviewer last reviewed the information, if any, prepared by the Appointed Actuary to assist the insurer in the completion of the MCT (BAAT) schedules in the P&C returns.

**For each peer review report, the Appointed Actuary should summarize each key finding or recommendation, and the status of each finding / recommendation by year.**

The Appointed Actuary should disclose if no peer reviews were completed in the last three years and the reasons why. Note that such circumstances would be rare and require OSFI pre-approval.

## 7.8 Re-submitting the report

The AAR must disclose the reason(s) for resubmission.

# 8. UNPAID CLAIMS AND LOSS RATIO ANALYSIS EXHIBIT

## 8.1 Introduction

The Unpaid Claims and Loss Ratio Analysis Exhibit (UCLR Analysis Exhibit), as shown in Appendix II, is constructed to allow the presentation and collection of industry loss information in a standard format. The compiled information allows for the analysis of the impact of discounting on claims reserves and the analysis of the evolution of loss trends. In order to achieve these objectives, the exhibits are constructed by class of insurance and by accident year and contain information on a current year and on a cumulative year basis.

## 8.2 Data

A page must be completed for each actuarial line of business and should reconcile to supporting exhibits in the AAR. Each actuarial line of business must be uniquely linked to one, and only one, Annual Return line of business as listed in Appendix III. For reinsurers, proportional and non-proportional business should be reported separately.

The company must specify on each page the basis, on which the Exhibit is completed, either "accident year" or "underwriting year". The selected basis should be the same for all pages. Insurers completing the exhibits on a "report year" basis should select "accident year".

If an actuarial line of business is a combination of two or more Annual Return lines, the Appointed Actuary must determine in which Annual Return line to place it to best represent the operations of the company. For actuarial lines of business where the earned premium is not available in the same detail as the claims (e.g. automobile-liability bodily injury and property damage), the Appointed Actuary should either estimate a split of the earned premium or combine the data showing it in the Annual Return line that best represents the line of business underwritten by the company.

A "Total" page must also be completed; this exhibit should balance to the AAR. An individual page does not have to be completed for a category that is not reviewed by the Appointed Actuary but the total discounted reserves including PfAD for the category must be included in Line 15 ("Other Provisions") of the "Total" page. The Appointed Actuary should also provide a breakdown with commentary in the AAR when "Other Provisions" is greater than the selected materiality.

In the UCLR Analysis Exhibit, the present value of unpaid claims and adjustment expenses (excluding PfADs) (Column [7]) is expected to be less than the total undiscounted unpaid claims and adjustment expenses (Column [6]). If amount in the column [7] is greater than the amount in column [6], the AAR must comment on the reason for the exception.

Claim counts reported in the UCLR Analysis Exhibit should be consistent with the way the Appointed Actuary defines and records claim counts in the AAR. The Appointed Actuary should provide the definition of claim count in the AAR, and describe any changes in the definition from the prior AAR. If it is difficult to obtain claim count information (e.g. reinsurers, assumed business, etc.), the Appointed Actuary should provide a rationale in the AAR for why claim count cannot be reported.

The definition of claim count could include, if applicable, but not be limited to:

- whether an occurrence with payments for multiple coverages/parties is counted as one claim or multiple claims,
- whether claims with no case outstanding and no payments are included in the definition of reported claim counts, and
- how reopened claims are treated.

The UCLR Analysis Exhibit should be completed on a net basis, with the Appointed Actuary defining "net" in the AAR. For instance, if the Appointed Actuary has completed his or her net analysis gross of intra-group reinsurance, the UCLR Analysis Exhibit should also be completed on this basis. Any adjustments to the net basis as reported in the AAR (e.g. industry pools or inter-company reinsurance) should be made in Lines 14 and 15 of the "Total" page.

The Appointed Actuary is responsible for ensuring the accuracy of the UCLR Analysis Exhibit and accompanying electronic filing.

Note that figures must be expressed in thousands of Canadian dollars.

Appendix IV contains detailed instruction for completing the UCLR Analysis Exhibit.

Effective Q4 2019, the data submission for the UCLRE return is changing from an ASCII format to XML format. Detailed instructions for completing the electronic filing can be found on OSFI's website: *Unpaid Claims and Loss Ratio Analysis Exhibit (UCLRE)*.

# 9. Appendix I - Expression of Opinion

I have valued the policy liabilities [and reinsurance recoverables] of [the Company] for its [consolidated] [statement of financial position] at [31 December XXXX] and their changes in the [consolidated] [statement of income] for the year then ended in accordance with accepted actuarial practice in Canada including selection of appropriate assumptions and methods.

**(Qualifications should be included here)**

In my opinion, the amount of policy liabilities [net of reinsurance recoverables] makes appropriate provision for all policy obligations and the [consolidated] financial statements fairly present the results of the valuation.

The results of my valuation together with amounts carried in the Annual Return are the following:

| **Claim Liabilities** | **Carried in Annual Return($'000)** | **Appointed Actuary's Estimate($'000)** |
|---|---|---|
| (1) Direct unpaid claims and adjustment expenses | | |
| (2) Assumed unpaid claims and adjustment expenses | | |
| (3) Gross unpaid claims and adjustment expenses | | |
| (4) Ceded unpaid claims and adjustment expenses | | |
| (5) Other amounts to recover | | |
| (6) Other net liabilities | | |
| (7) Net unpaid claims and adjustment expenses (3)-(4)-(5)+(6) | | |

| **Premium Liabilities** | **Carried in Annual Return ($'000) (Col. 1)** | **Appointed Actuary's Estimate ($'000) (Col. 2)** |
|---|---|---|
| (1) Gross policy liabilities in connection with unearned premiums | | |
| (2) Net policy liabilities in connection with unearned premiums | | |
| (3) Gross unearned premiums | | |
| (4) Net unearned premiums | | |
| (5) Premium deficiency | | |
| (6) Other net liabilities | | |
| (7) Deferred policy acquisition expenses | | |
| (8) Maximum policy acquisition expenses deferrable $[(4)+(5)+(9)]_{Col.\ 1} - (2)_{Col.\ 2}$ | | |
| (9) Unearned Commissions + Ceded Deferred Premium Taxes + Ceded Deferred Insurance Operations Expenses | | |

_____ FCIA
Signature of Appointed Actuary

_____
Date opinion was rendered

_____ FCIA
Printed name of Appointed Actuary

_____
Location opinion was rendered

The language in square brackets is variable and other language may be adjusted to conform to interim financial statements and to the terminology and presentation in the financial statements.

# 10. Appendix II - Unpaid Claims and Loss Ratio Analysis Exhibit

**Unpaid Claims and Loss Ratio Analysis Exhibit (030)**

(All amounts are on a Net basis and in $'000)

**Exhibit Category Code:** Total

**Actuary's Category Code :** Total

**Aggregation Type Code:**

| | | | Paid Losses[a] | | Unpaid Claim Analysis[a] | | | | | | | | | | Loss Ratio Analysis[a] | | Claim Counts | | As at Prior Year-end | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Undiscounted Unpaid Claims and Adjustment Expenses | | | | Provision and Margin for Adverse Deviation (PfAD and MfAD) | | | | | | | | | | |
| Line no | Year code | Accident/ Underwriting Year | Current Year (XXXX) | Cumulative (XXXX and Prior) | Bornhuetter-Ferguson Initial Expected Loss Ratio Assumptions | Case Reserves | IBNR | Total | Present Value of Unpaid Claims and Adjustment Expenses - Total | PfAD: Claims ($'000) | MfAD: Claims (%) | PfAD: Reinsurance ($'000) | PfAD: Interest Rate ($'000) | Discounted Reserves Including PfAD | Earned Premiums | Undiscounted Loss Ratio (%) | Open as at Year-end | Reported to Date | Total Undiscounted Unpaid Claims and Adjustment Expenses[a] | Reported Claim Counts to Date |
| | | (01) | (02) | (03) | (22) | (04) | (05) | (06) | (07) | (08) | (09) | (10) | (11) | (12) | (13) | (16) | (18) | (19) | (20) | (21) |
| | | | m1 | m2 | m3 | m4 | m5 | m6 | m7 | m8 | m9 | m10 | m11 | m12 | m13 | m14 | m15 | m16 | m17 | m18 |
| 1 | 01 | XXXX-10 & Prior | | | | | | | | | | | | | | | | | | |
| 2 | 02 | XXXX-9 | | | | | | | | | | | | | | | | | | |
| 3 | 03 | XXXX-8 | | | | | | | | | | | | | | | | | | |
| 4 | 04 | XXXX-7 | | | | | | | | | | | | | | | | | | |
| 5 | 05 | XXXX-6 | | | | | | | | | | | | | | | | | | |
| 6 | 06 | XXXX-5 | | | | | | | | | | | | | | | | | | |
| 7 | 07 | XXXX-4 | | | | | | | | | | | | | | | | | | |
| 8 | 08 | XXXX-3 | | | | | | | | | | | | | | | | | | |
| 9 | 09 | XXXX-2 | | | | | | | | | | | | | | | | | | |
| 10 | 10 | XXXX-1 | | | | | | | | | | | | | | | | | | |
| 11 | 11 | XXXX | | | | | | | | | | | | | | | | | | |
| 12 | 99 | Total | | | | | | | | | | | | | | | | | | |

**APV Reserves including ULAE, FA and Other (040)**

| | | | | |
|---|---|---|---|---|
| 13 | | ULAE - Total | m19 | |
| 14 | | "Facility Association" and "Plan" | m20 | |
| 15 | | Other Provisions | m21 | |
| 16 | | Grand Total | m22 | |

a) Including Allocated loss adjustment expenses (ALAE), but excluding Unallocated loss adjustment expenses (ULAE), except for lines 13 to 15.

## Unpaid Claims and Loss Ratio Analysis Exhibit (030)

(All amounts are on a Net basis and in $'000)

**Exhibit Category Code:** _____

**Actuary's Category Code :** _____

**Aggregation Type Code:** _____

| | | | Paid Losses[a] | | Unpaid Claim Analysis[a] | | | | | | | | | | Loss Ratio Analysis[a] | | Claim Counts | | As at Prior Year-end | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line no | Year code | Accident Year | Current Year (XXXX) | Cumulative (XXXX and Prior) | Bornhuetter-Ferguson Initial Expected Loss Ratio Assumptions | Undiscounted Unpaid Claims and Adjustment Expenses | | | Present Value of Unpaid Claims and Adjustment Expenses - Total | Provision and Margin for Adverse Deviation (PfAD and MfAD) | | | | Discounted Reserves Including PfAD | Earned Premiums | Undiscounted Loss Ratio (%) | Open as at Year-end | Reported to Date | Total Undiscounted Unpaid Claims and Adjustment Expenses[a] | Reported Claim Counts to Date |
| | | | | | | Case Reserves | IBNR | Total | | PfAD: Claims ($'000) | MfAD: Claims (%) | PfAD: Reinsurance ($'000) | PfAD: Interest Rate ($'000) | | | | | | | |
| | | (01) | (02) | (03) | (22) | (04) | (05) | (06) | (07) | (08) | (09) | (10) | (11) | (12) | (13) | (16) | (18) | (19) | (20) | (21) |
| | | | m1 | m2 | m3 | m4 | m5 | m6 | m7 | m8 | m9 | m10 | m11 | m12 | m13 | m14 | m15 | m16 | m17 | m18 |
| 1 | 01 | XXXX-10 & Prior | | | | | | | | | | | | | | | | | | |
| 2 | 02 | XXXX-9 | | | | | | | | | | | | | | | | | | |
| 3 | 03 | XXXX-8 | | | | | | | | | | | | | | | | | | |
| 4 | 04 | XXXX-7 | | | | | | | | | | | | | | | | | | |
| 5 | 05 | XXXX-6 | | | | | | | | | | | | | | | | | | |
| 6 | 06 | XXXX-5 | | | | | | | | | | | | | | | | | | |
| 7 | 07 | XXXX-4 | | | | | | | | | | | | | | | | | | |
| 8 | 08 | XXXX-3 | | | | | | | | | | | | | | | | | | |
| 9 | 09 | XXXX-2 | | | | | | | | | | | | | | | | | | |
| 10 | 10 | XXXX-1 | | | | | | | | | | | | | | | | | | |
| 11 | 11 | XXXX | | | | | | | | | | | | | | | | | | |
| 12 | 99 | Total | | | | | | | | | | | | | | | | | | |

### MfAD and Interest Rate (050)

| | | | | |
|---|---|---|---|---|
| 17 | | MfAD: Reinsurance (%) | m23 | |
| 18 | | MfAD: Interest Rate (%) | m24 | |
| 19 | | Interest Rate to Discount Unpaid Claims and Adjustment Expenses (%) | m25 | |

a) Including Allocated loss adjustment expenses (ALAE), but excluding Unallocated loss adjustment expenses (ULAE)

# 11. Appendix III – Annual Return Lines of Business

- Property-Personal
- Property-Commercial
- Aircraft
- Automobile-Liability - Private Passenger
- Automobile-Personal Accident - Private Passenger
- Automobile-Other - Private Passenger
- Automobile-Liability - Other than Private Passenger
- Automobile-Personal Accident - Other than Private Passenger
- Automobile-Other - Other than Private Passenger
- Boiler and Machinery
- Credit
- Credit Protection
- Fidelity
- Hail
- Legal Expense
- Liability
- Mortgage
- Other Approved Products
- Surety
- Title
- Marine
- Accident and Sickness

# 12. Appendix IV - Unpaid Claims and Loss Ratio Analysis Exhibit

## 12.1 Information Contained in the Unpaid Claims and Loss Ratio Analysis Exhibits (by Column)

The UCLR Analysis Exhibit contains amounts segregated by accident years (refer to Section 12.3 for instructions on other than an accident year basis). All amounts entered on the UCLR Analysis Exhibit should be expressed in Canadian dollars and rounded to the nearest thousand dollars.

Columns 03, 13, 16, 19, 21 and 22 must be completed for the past 10 accident years while columns 02, 04 through 12, 18 and 20 must be completed for all accident years.

### 12.1.1 Column 01 – Accident Year or Underwriting Year

Column 01 of the exhibit represents the segregation by accident/underwriting year, as specified in Aggregation Type Code. Line 11 represents the most recent accident/underwriting year, lines 02 to 10 represent the nine prior accident/underwriting years and line 01 represents all prior years to line 02.

### 12.1.2 Column 02 – Paid Losses: Current Year

Column 02 represents the paid claims and paid allocated adjustment expenses for the current calendar year.

Paid losses for Accident year XXXX-10 & Prior should be reported in Line 1.

### 12.1.3 Column 03 – Paid Losses: Cumulative

Column 03 represents the cumulative paid claims and paid allocated adjustment expenses for all calendar years.

### 12.1.4 Column 04 – Undiscounted Unpaid Claims and Adjustment Expenses: Case Reserves

Undiscounted case basis reserves of the unpaid claims and allocated adjustment expenses are presented in column 04. If the claim liabilities are case reserved on a discounted basis (e.g. tabular reserves), the discounted case reserves are to be entered.

### 12.1.5 Column 05 – Undiscounted Unpaid Claims and Adjustment Expenses: IBNR

Undiscounted incurred but not reported reserves are shown in column 05. These reserves also include any adjustment for the deficiency or redundancy of the case reserves (also known as the broad definition of IBNR) presented in column 04. The undiscounted IBNR includes all amounts related to the undiscounted unpaid allocated adjustment expenses. If the undiscounted claim liabilities for a line are not available, (e.g. tabular reserves), then the discounted IBNR should be entered.

### 12.1.6 Column 06 – Undiscounted Unpaid Claims and Adjustment Expenses: Total

This is the total of columns 04 and 05.

### 12.1.7 Column 07 – Present Value of Unpaid Claims and Adjustment Expenses: Total

Present value case basis reserves and IBNR of the unpaid claims and allocated adjustment expenses are presented in column 07. The underlying rule to be respected with the completion of the UCLR Analysis Exhibit is that the amounts shown should correspond to those calculated by the Appointed Actuary in the AAR. Do not add any PfAD to this column.

### 12.1.8 Column 08 – Provision for Adverse Deviation (PfAD): Claims

The provision for adverse deviation on claims is presented in column 08.

### 12.1.9 Column 09 – MfAD: Claims (%)

This column is the margin for adverse deviation and is equal to the ratio of column 08 to column 07.

### 12.1.10 Column 10 – PfAD: Reinsurance

The provision for reinsurance adverse deviation is presented in column 10.

### 12.1.11 Column 11 – PfAD: Interest Rate

The provision for interest rate adverse deviation is presented in column 11.

### 12.1.12 Column 12 – Discounted Reserves Including PfAD

Column 12 is the result of the following formula:

*Column* (07) + *Column* (08) + *Column* (10) + *Column* (11)

**Note:** for the "Total" exhibit, amounts for column 12 are entered on line 13 (ULAE – Total), line 14 (Facility Association and Plan) and line 15 (Other Provisions) as well as line 16 (Grand Total). Lines 13 through 16 are included only in the "Total" exhibit.

### 12.1.13 Column 13 – Earned Premiums

Earned premiums are shown separately by accident year. Net earned premiums are reported and developed at ultimate where development is possible, for example, where experience rating is used.

### 12.1.14 Column 16 – Loss Ratio (%): Undiscounted

The undiscounted loss ratio is calculated using the following formula:

100 x [*Column*(03) + *Column*(06)] / *Column*(13)

### 12.1.15 Column 18 – Open Claim Counts as at Year-end

Open claim counts for an accident/underwriting year refer to the number of claims that has not been settled or on which payments are still being made as at the current year-end. If it is difficult to obtain claim count information (e.g. reinsurers, assumed business, etc.), this column should be left blank (i.e. not zero) and the Appointed Actuary should provide a rationale in the AAR.

### 12.1.16 Column 19 – Reported Claim Counts to Date

Reported claim counts for an accident/underwriting year refer to cumulative reported claim counts as at the current year-end. If it is difficult to obtain claim count information (e.g. reinsurers, assumed business, etc.), this column should be left blank (i.e. not zero) and the Appointed Actuary should provide a rationale in the AAR.

### 12.1.17 Column 20 – Total Undiscounted Unpaid Claims and Adjustments Expenses As at Prior Year-end

This is equal to column 06 from the corresponding pages of the prior UCLR Analysis Exhibit. Where there are changes in the actuarial lines of business or the reinsurance/retrocession arrangements, the Appointed Actuary must allocate total undiscounted unpaid claims and adjustment expenses from the prior AAR to the current actuarial line of business, based on the current reinsurance/retrocession arrangements, using a reasonable approximation.

### 12.1.18 Column 21 – Reported Claim Counts to Date as at Prior Year-end

This is equal to column 19 from the corresponding pages of the prior UCLR Analysis Exhibit. When the actuarial lines of business or definition of claim count have changed from the prior AAR, the AA must allocate reported claim counts to date from the prior AAR to the current actuarial line of business and definition of claim count using a reasonable approximation. If it is difficult to obtain claim count information (e.g. reinsurers, assumed business, etc.), this column should be left blank (i.e. not zero) and the Appointed Actuary should provide a rationale in the AAR.

### 12.1.19 Column 22 – Bornhuetter-Ferguson Initial Expected Loss Ratio Assumptions

This is the expected loss ratio assumptions used in the Bornhuetter-Ferguson (B-F) or the Expected Loss Ratio (ELR) method to estimate ultimate loss for the current year's valuation. If neither the B-F nor the ELR method is considered for an actuarial line of business, this column should be left blank (i.e. not zero).

## 12.2 Information Contained in the Unpaid Claims and Loss Ratio Analysis Exhibit (by Line)

The amounts contained in lines 1 to 12 of UCLR Analysis Exhibit exclude all paid and unpaid ULAE.

### 12.2.1 Line 13 – ULAE - Total

Discounted unpaid ULAE, including provisions for adverse deviation (PfAD), are entered in line 13 in the "Total" exhibit but excluded entirely from the other exhibits.

### 12.2.2 Line 14 – "Facility Association" and "Plan"

The discounted unpaid claims of all automobile pools (e.g. Facility Association, Ontario Risk Sharing Pool and Plan de Répartition des Risques) are entered in line 14 (Facility Association and Plans) of the "Total" exhibit but excluded from all the other exhibits.

### 12.2.3 Line 15 – Other Provisions

The discounted unpaid claims for all other provisions (e.g. non-material lines of business, non-automobile industry pools and inter-company reinsurance) are entered in line 15 (Other Provisions) of the "Total" exhibit.

### 12.2.4 Line 16 – Grand Total

This is the total of lines 12 through 15 of column 12 of the "Total" exhibit. The Grand Total should balance to the Appointed Actuary's Estimate of net unpaid claims and adjustment expenses in the Opinion Page.

### 12.2.5 Line 17 – MfAD: Reinsurance (%)

The margin for adverse deviation on reinsurance is presented in line 17. If the margins vary by year, a weighted average of margins that produces the same total PfAD should be entered.

### 12.2.6 Line 18 – MfAD: Interest Rate (%)

The margin for adverse deviation on interest rate is presented in line 18. If the margins vary by year, a weighted average of margins that produces the same total PfAD should be entered.

### 12.2.7 Line 19 – Interest Rate to Discount Unpaid Claims & Adjustment Expenses (%)

The interest rate entered on this line should include an explicit provision for asset default – cross reference with Section 6.7.4. Do not subtract interest rate MfAD from this line. If the interest rates vary by year, a weighted average of interest rate that produces the same total present value of unpaid claims and adjustment expenses should be entered.

## 12.3 Claims Reported on Other than an Accident Year Basis

Normally, the UCLR Analysis Exhibit will be completed on an accident year basis (year in which the claim was incurred).

However, some insurers may have used a basis other than accident year when completing the AAR. This includes reinsurers reporting on an underwriting year basis (year when the policy is written) as well as insurers writing policies on a claim-made basis who declare on report year (year when the claim is reported). These insurers may encounter difficulties in completing the UCLR Analysis Exhibit on an accident year basis.

It is recommended that the basis that is most suited to the company's operation be used to complete the exhibits. Insurers completing the exhibits on an underwriting year basis must advise OSFI. In such case, line 15 (Other Provisions) of the "Total" exhibit must be adjusted so that line 16 (Grand Total) equals to the net unpaid claims and adjustment expenses reported in the opinion page of the AAR.

# Guideline

**Subject:** **Regulatory Capital and Internal Capital Targets**

**Category:** **Capital Management**

**No:** **A-4** **Date:** **December 2017**
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This guideline sets out OSFI's expectations with regard to the capital and solvency assessment of federally regulated insurers (insurer)[1], within the context of OSFI's *Supervisory Framework.*[2]

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[1] Insurer refers to federally regulated insurers including Canadian branches of foreign life and property and casualty companies, fraternal benefit societies, regulated insurance holding companies and non-operating insurance companies.

[2] Consult OSFI's website (www.osfi-bsif.gc.ca) for more information regarding OSFI's *Supervisory Framework*, including related *Assessment Criteria* documents.

## I. The Role of Capital in OSFI's Risk Assessment Process

OSFI's risk assessment process begins with an evaluation of the inherent risk within each significant activity of an insurer and the quality of risk management applied to mitigate these risks. After considering this information, OSFI determines the level of net risk and direction (i.e., whether it is decreasing, stable, or increasing) of the rating for each significant activity.

The net risks of the significant activities are combined, by considering their relative importance, to arrive at the Overall Net Risk (ONR) of the insurer. The ONR is a consolidated rating or assessment of the potential adverse impact that the significant activities collectively could have on the insurer's earnings performance and adequacy of capital. OSFI then develops a Composite Risk Rating (and its direction) for the insurer, after considering the assessments of its earnings and capital in relation to the ONR, and the assessment of liquidity.

While regulatory capital is an important factor in OSFI's capital assessment, other factors are also considered. OSFI's *Capital Assessment Criteria* include, for example:

- adequacy of capital to support the insurer's risk profile and business plan, including risks that are not fully captured in the regulatory capital guidelines;
- ability to access capital at reasonable rates to meet projected needs;
- quality of capital;
- quality or strength of the insurer's capital management policy, including its capital management processes; and
- effectiveness with respect to the insurer's capital management processes.

Capital considerations should include elements of capital that contribute to financial strength through periods when an insurer is under stress (e.g., common shares) as well as elements that contribute to policyholder and creditor protection during wind-up (e.g., subordinated debt). Some elements may contribute to both, while others are less likely to do so.

OSFI expects the level and quality of an insurer's capital and its capital management to be commensurate with its circumstances, including its risk profile, appetite for risk and operating environment. Past and emerging trends, including the outlook for capital, earnings and liquidity, as well as the insurer's preparedness to deal with potential capital deficiencies, are relevant in assessing the adequacy of an insurer's capital position. In this regard, the number, severity and overall quality of the stress scenarios used by an insurer to assess its capital adequacy in relation to all relevant regulatory and internal capital expectations are important considerations for OSFI when it assesses the strength of an insurer's capital.

Insurers should have risk and capital management processes that take into account their risk profile and business strategy, potential stress situations and future changes to enable them to effectively monitor and manage their ability to meet, on a continuous basis, regulatory as well as internal capital expectations.

## II. Regulatory Capital

The *Insurance Companies Act* requires federally regulated insurance companies and fraternal benefit societies to maintain adequate capital and companies operating in Canada on a branch basis to maintain an adequate margin of assets in Canada over liabilities in Canada. Guidelines A: *Mortgage Insurer Capital Adequacy Test* (MICAT), *Minimum Capital Test (MCT)* and *Life Insurance Capital Adequacy Test (LICAT)* (together referred to as Capital Guidelines) provide the framework within which the Superintendent assesses whether a mortgage insurer, a P&C insurer that is not a mortgage insurer, or a life insurer, respectively, maintains adequate capital or margin.[3]

The Capital Guidelines establish standards for measuring specific insurer risks and for aggregating these results to calculate the amount of an insurer's regulatory capital needed to support these risks (capital requirement). For P&C insurers, the MICAT and the MCT guidelines define the capital requirement amount as the minimum capital required, while for life insurers the capital requirement amount is referred to as the Base Solvency Buffer in the LICAT. In relation to these capital requirements, OSFI has determined industry minimum and target capital levels.[4] These serve as a gauge of a financial institution's regulatory capital adequacy and can trigger intervention actions.[5]

The Capital Guidelines also define and establish criteria and limits for determining the amount of an insurer's qualifying regulatory capital (Capital Resources). For P&C insurers, this is referred to as capital available in the MICAT and MCT guidelines, while for life insurers, it is Available Capital plus Surplus Allowance (SA) and Eligible Deposits (ED) in the LICAT.

| **Components of Regulatory Capital[6]** | | | | |
|---|---|---|---|---|
| | **MICAT Total** | **MCT / BAAT Total** | **LICAT / LIMAT Total** | **LICAT / LIMAT Core** |
| **Capital Resources** | Capital available | Capital available | Available Capital + SA + ED | Tier 1 Capital[7] + 70% of SA + 70% of ED |
| **Capital requirement** | Minimum capital required | Minimum capital required | Base Solvency Buffer | Base Solvency Buffer |

[3] In this guideline, the use of concepts applicable to companies and societies also includes the equivalent concepts applicable to foreign companies' and societies' branch operations in Canada. For example, the concept "capital" includes the equivalent concepts of "margin" and "Net Assets Available" as it applies to branches; "Available Capital" includes "Available Margin" and "Tier 1" includes "Available Margin excluding Other Admitted Assets".

[4] For life insurers, regulatory minimum and target capital levels are calculated on the basis of both total and core, while P&C insurers base theirs solely on total.

[5] The *Guide to Intervention for Federally Regulated Life Insurance Companies* and *Supervisory Guide Applicable to Federally Regulated Insurance Companies* can be found on OSFI's website.

[6] The terms capital available, Available Capital, Surplus Allowance, Eligible Deposits, minimum capital required and Base Solvency Buffer are defined in the Capital Guidelines.

[7] For life insurers, the LICAT includes additional criteria for determining the amount that qualifies as Tier 1 Capital (Tier 1), which is comprised of only the highest quality capital elements.

Minimum Capital

The Capital Guidelines address specific insurer risks and determine minimum capital levels (Minimums) to support these risks.

> ***Minimums:*** *The minimum levels of capital necessary for an insurer to cover the risks specified in the Capital Guidelines.*

If an insurer's Capital Resources approached, or were to fall below, the Minimums, OSFI would be very concerned about the ongoing viability of the insurer and/or the level of risk to policyholders and creditors.

Supervisory Target Capital

OSFI's mandate includes an early intervention approach. This is partly addressed by establishing supervisory target capital levels (Supervisory Targets) above the Minimums that provide an early signal so that intervention will be timely and for there to be a reasonable expectation that actions can successfully address difficulties.[8]

> ***Supervisory Targets:*** *The target levels of capital necessary for an insurer to cover the risks specified in the Capital Guidelines as well as to provide a margin for other risks.*

From a supervisory perspective, an insurer's failure to maintain Capital Resources above the Supervisory Targets is indicative of material safety and soundness concerns and a vulnerability to adverse business and economic conditions that require immediate attention. An insurer whose Capital Resources approach or fall below the Supervisory Targets will attract increased supervisory attention, which would generally include an early warning intervention status (i.e. stage 1). The intensity and nature of supervisory intervention would depend on the circumstances of the particular insurer.

Regulatory Capital Levels

OSFI has set the following capital levels expressed as a percentage of the amount of an insurer's capital requirements:

| **Regulatory Capital Levels** | | | | |
|---|---|---|---|---|
| | **MICAT** | **MCT / BAAT** | **LICAT / LIMAT** | |
| | **Total** | **Total** | **Total** | **Core** |
| **Minimums** | 100% | 100% | 90% | 55%[9] |
| **Supervisory Targets** | 150% | 150% | 100% | 70% |

[8] Supervisory Targets are not applicable to regulated insurance holding companies and non-operating insurance companies.

[9] Regulated life insurance holding companies and non-operating life insurance companies are required to maintain a minimum Core level of 50%.

For monitoring purposes and in OSFI supervisory and other documentation, the amount of Capital Resources is generally expressed as a percentage of the amount of an insurer's capital requirements and compared to the above capital levels.

## III. Internal Capital Targets

All risks specific to an individual insurer cannot be explicitly addressed by industry-wide Capital Guidelines alone. The Minimums and Supervisory Targets are based upon simplifying assumptions applicable on an industry-wide basis, and are not tailored to individual insurers' risk profiles. Accordingly, an insurer should not unduly rely on these regulatory capital measures but should conduct its Own Risk and Solvency Assessment (ORSA) and, based on this process, determine its own capital needs and establish Internal Capital Targets (Internal Targets).[10]

> ***Internal Targets:*** *The target levels of capital, determined as part of an insurer's ORSA, needed to cover all the risks of the insurer, including the risks specified in the Capital Guidelines.*

Insurers are expected to determine an Internal Target of total capital. Life insurers are expected to determine, in addition to the Internal Target of total capital, an Internal Target of core capital. OSFI should be notified when an insurer changes its Internal Targets.

Internal Targets should be set above Supervisory Targets. To determine whether Internal Targets are above Supervisory Targets, insurers should compare their total and core Internal Targets to the total and core Supervisory Targets respectively.[11]

Parent/head office guarantees, potential future injections of capital or other potential management actions that change the insurer's business or risk profile are not assumed in the determination of the Supervisory Targets[12] and should therefore not be assumed in the setting of Internal Targets.[13] These factors should only be considered when determining the level at which the insurer will operate.

Insurers are expected to operate at Capital Resources levels above the Internal Targets.[14] OSFI understands that an insurer's Capital Resources levels may fall below its Internal Targets on unusual and infrequent occasions. If this happens, or is anticipated to happen within two years[15],

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[10] Guideline E-19: *Own Risk and Solvency Assessment* outlines OSFI expectations and principles with respect to setting Internal Targets, based on an insurer's ORSA.

[11] To determine whether Internal Targets are above Supervisory Targets, Internal Targets should be expressed as a percentage of the amount of an insurer's capital requirements and compared to the Regulatory Capital Levels.

[12] Parent/head office guarantees, potential future injections and other potential management actions that change the insurer's business or risk profile are also not considered in the calculation of the Minimums.

[13] Consistent with Canadian P&C insurers that are not mortgage insurers, Canadian branches of foreign P&C insurers use a specified amount of the company's worldwide capital and surplus in the calculation of their capital requirements for earthquake risk, a component of the Supervisory Target. Both Canadian P&C insurers that are not mortgage insurers and Canadian branches of foreign P&C insurers may therefore include such amounts, to the extent permitted in the MCT, in the determination of their Internal Target.

[14] For monitoring purposes, an insurer's capital ratios, calculated per the Capital Guidelines, are used to determine whether an insurer is operating above its Internal Targets.

[15] As may be contained in financial forecasts or other reports (e.g., projections of very likely scenarios) prepared for Senior Management, the Board, investors or the public.

the insurer should inform OSFI promptly and provide plans on how it expects to manage the risks and/or restore its Capital Resources levels to its Internal Targets within a relatively short period of time.

## IV. Capital Management Policy

Capital management is the on-going process of determining and maintaining the quantity and quality of capital appropriate to support an insurer's planned operations. Capital should be managed to maintain financial strength, absorb losses so as to withstand adverse economic conditions, allow for growth opportunities and meet other risk management and business objectives. It should also be managed in order to provide, in extreme cases such as imminent failure or insolvency, sufficient assets to transfer or run-off policyholder obligations and pay creditor claims.

The insurer's ORSA and its strategic and business plans should support the insurer in establishing and maintaining capital management policies and procedures that include, among other things[16]:

- Clearly defined roles and responsibilities with respect to the design and execution of relevant policies and procedures;
- A policy that states capital adequacy goals relative to risk, taking into account the insurer's strategic focus and business plan, and that sets its Internal Targets;

Please refer to OSFI's *Corporate Governance Guideline* for OSFI's expectations of insurer Boards of Directors in regards to the management of capital and liquidity.

**– END –**

[16] For additional guidance on how an insurer's ORSA links risk management, capital management and other management processes, please refer to OSFI's Guideline E-19: *Own Risk and Solvency Assessment*.

# Guideline

**Subject:** **Stress Testing**

**Category:** **Sound Business and Financial Practices**

**No:** **E-18** **Date: December 2009**

Stress testing is an important tool for senior management to use in making business strategy, risk management and capital management decisions. This guideline sets out OSFI's expectations with respect to stress testing and applies to banks and bank holding companies, and to all federally regulated trust and loan companies, cooperative credit associations, life insurance companies and fraternal benefit societies, property and casualty insurance companies and insurance holding companies (collectively referred to as "institutions").

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## A. Stress Testing Defined

Stress testing is a risk management technique used to evaluate the potential effects on an institution's financial condition, of a set of specified changes in risk factors, corresponding to exceptional but plausible events[1]. Stress testing includes scenario testing and sensitivity testing (refer to Glossary).

Stress testing is especially important after long periods of benign economic and financial conditions, when fading memory of negative conditions can lead to complacency and the underpricing of risk. It is also a key risk management tool during periods of expansion, when innovation leads to new products that grow rapidly and for which limited or no historical experience is available.

Stress testing attempts to determine the impact of situations where the assumptions underlying established models used in managing a business break down. This applies equally to valuation models, models of individual risks and models that aggregate individual risks.

## B. Purposes of Stress Testing

Stress testing should be embedded in enterprise wide risk management. A stress testing program as a whole should be actionable, playing an important role in facilitating the development of risk mitigation or contingency plans across a range of stressed conditions. It should feed into the institution's decision making process, including setting the institution's risk appetite, setting exposure limits, and evaluating strategic choices in longer term business planning.

An institution's stress testing program should serve the following purposes:

i. **Risk identification and control** – Stress testing should be included in an institution's risk management activities at various levels, for example, ranging from risk mitigation policies at a detailed or portfolio level to adjusting the institution's business strategy. In particular, it should be used to address institution-wide risks, and consider the concentrations and interactions between risks in stress environments that might otherwise be overlooked.

ii. **Providing a complementary risk perspective to other risk management tools** – Stress tests should complement risk quantification methodologies that are based on complex, quantitative models using backward looking data and estimated statistical relationships. In particular, stress testing outcomes for a particular portfolio can provide insights about the validity of statistical models at high confidence intervals, for example those used to determine VaR.

    As stress testing allows for the simulation of shocks which have not previously occurred, it should be used to assess the robustness of models to possible changes in the economic and financial environment. Stress tests should help to detect

[1] *Stress Testing by Large Financial Institutions: Current Practice and Aggregation Issues*, Committee on the Global Financial System, April 2000

vulnerabilities such as unidentified risk concentrations or potential interactions between types of risk that could threaten the viability of the institution, but may be concealed when relying purely on statistical risk management tools based on historical data.

Stress testing can also be used to assess the impacts of customer behaviour arising from options embedded in certain products – particularly where the impact is not easily modelled under extreme events.

iii. **Supporting capital management –** Stress testing should form an integral part of institutions' internal capital management where rigorous, forward-looking stress testing can identify severe events, including a series of compounding events, or changes in market conditions that could adversely impact the institution.

iv. **Improving liquidity management** – Stress testing should be a central tool in identifying, measuring and controlling funding liquidity risks, in particular for assessing the institution's liquidity profile and the adequacy of liquidity buffers in case of both institution-specific and market-wide stress events.

## C. Role of Senior Management

Senior management (including, in the case of foreign insurance or bank branches, the Chief Agent or Principal Officer, respectively, and an appropriate senior official from the branch's home office) involvement in the stress testing program is essential for its effective operation. Senior management is accountable for the program's implementation, management and oversight and for ensuring that the institution has adequate plans to deal with remote but plausible stress scenarios.

Senior management must ensure there is a "fit for purpose" program in place that is enterprise wide and that operational management has adopted policies requiring appropriate use of stress testing as a management tool.

Senior management should be able to identify and clearly articulate the institution's risk appetite and understand the impact of stress events on the risk profile of the institution. Senior management must participate in the review and identification of potential stress scenarios, as well as contribute to the development and implementation of risk mitigation strategies. In addition, senior management should consider an appropriate number of well-understood, documented, utilised and sufficiently severe scenarios that are relevant to their institution. Senior management's endorsement of stress testing as a guide in decision-making is particularly valuable when the tests reveal vulnerabilities that the institution finds costly to address or difficult to resolve in a timely, appropriate and realistic manner.

Please refer to OSFI's *Corporate Governance Guideline* for OSFI's expectations of institution Boards of Directors in regards to operational, business, risk and crisis management policies.

## D. General Considerations for Stress Testing Programs

*Stress testing programs should take account of views from across the organisation and should cover a range of perspectives and techniques.*

The identification of relevant stress events, the application of sound modelling approaches and the appropriate use of stress testing results each require the collaboration of different senior experts such as risk controllers, economists, business managers, traders and actuaries. Institutions should also use a range of techniques in order to achieve comprehensive coverage in their stress testing program, including quantitative and qualitative techniques to support and complement models and to extend stress testing to areas where effective risk management requires greater use of judgement.

*Institutions should have written policies and procedures governing the stress testing program. The operation of the program should be appropriately documented.*

The assumptions and fundamental elements for each stress testing exercise should be appropriately documented, including the reasoning and judgements underlying the scenarios chosen and the sensitivity of stress testing results to the range and severity of the scenarios. The level of documentation should be based on the nature and purposes of the stress testing. For example, documentation of ad hoc sensitivity tests for tactical decisions may be less elaborate than the documentation of enterprise-wide stress tests used for strategic decision making. An evaluation of fundamental assumptions should be performed regularly or in light of changing external conditions. The results of the assessments should also be documented.

*An institution should have a suitably robust infrastructure in place, which is sufficiently flexible to accommodate different and possibly changing stress tests at an appropriate level of granularity.*

The infrastructure should be able to aggregate comparable risks and exposures across the institution. It should allow for reporting to senior management in a timely manner throughout the fiscal year. The infrastructure and information systems should be sufficiently flexible to accommodate a timely increase in the frequency of ad hoc sensitivity testing to support senior management's response to rapid changes in the operating environment and also for purposes of responding to the concerns of external stakeholders and regulators.

An institution's stress testing infrastructure and information systems should be commensurate with the nature and complexity of the institution and its risk profile. For example, greater risk factor volatility and shorter time horizons for management actions require infrastructure and information systems that accommodate more frequent stress testing in those areas.

*An institution should regularly maintain and update its stress testing framework. The effectiveness of the stress testing program, as well as the robustness of individual components, should be assessed regularly and independently.*

Assessments of effectiveness should be qualitative as well as quantitative, given the importance of judgments and the severity of shocks considered. Areas for assessment should include effectiveness of the program in meeting its intended purposes, documentation, development work, system implementation, management oversight, data quality and hypotheses and assumptions used.

Since the stress test development and maintenance processes often imply judgmental and expert decisions (e.g. assumptions to be tested, calibration of the stress, etc.), the independent control functions such as risk management and internal audit should also play a key role in the process. In particular there should be an independent review (e.g., by internal audit) of the adequacy of the design and effectiveness of the operations of an institution's stress testing programs.

## E. Methodology and Scenario Selection

*Stress tests should cover a range of risks and business areas, as well as at the institution-wide level. An institution should be able to integrate effectively, in a meaningful fashion, across the range of its stress testing activities to deliver a complete picture of institution-wide risk.*

A stress testing program should consistently and comprehensively cover product-, business- and entity-specific views. Using a level of granularity appropriate to the purpose of the stress test, stress testing programs should examine the effect of shocks across all relevant risk factors, taking into account interrelations among them.

Comprehensive stress testing programs should consider the institution's most material and significant risks. Where relevant and material, such risks may include:

- *credit risk, including counterparty and reinsurance risk*
- *market risk, e.g.,*
  - *general market*
  - *specific*
  - *cash flow mismatch*
  - *interest rate*
  - *foreign exchange*
  - *commodity*
- *insurance risk, e.g.,*
  - *mortality*
  - *morbidity*
  - *claim frequency and severity*
  - *persistency and lapse risk*

- *liquidity risk*
- *operational and legal risk*
- *concentration risk*
- *contagion risk*
- *risk to reputation*
- *securitization risk*
- *new business risk*
- *regulatory risk*
- *inflation risk*

The impact of stress tests is usually evaluated using one or more measures. The particular measures used will depend on the specific purpose of the stress test, the risks and portfolios being analysed and the particular issue under examination. A range of measures may need to be considered to convey an adequate impression of the impact. Typical measures used are:

- asset and liability values
- level of impaired assets and write-offs
- accounting profit and loss
- economic profit and loss
- required and available regulatory capital
- economic capital
- liquidity and funding gaps

*Stress testing programs should apply across business and product lines and cover a range of scenarios, including non-historical scenarios, and aim to take into account system-wide interactions and feedback effects (e.g., second order and macroeconomic effects).*

Stress tests should be conducted flexibly and imaginatively, in order to improve the likelihood of identifying hidden vulnerabilities. A "failure of imagination" could lead to an underestimation of the likelihood and severity of extreme events and to a false sense of security about an institution's resilience.

The institution should assess the impact of severe shocks and periods of severe and sustained downturns, including its ability to react over the time horizon appropriate for the business and risks being tested.

Institutions should use stress tests to identify, monitor and control risk concentrations. To adequately address risk concentrations, the scenario should to be firm-wide and

comprehensive, covering balance sheet and off-balance sheet assets, contingent and non-contingent risks, and should give due consideration to actions beyond contractual obligations that might be undertaken to preserve reputation. Further, stress tests should identify and respond to potential changes in market conditions that could adversely impact an institution's exposure to risk concentrations.

*Stress tests should feature a range of severities, including events capable of generating the most damage, whether through size of loss or through loss of reputation. A stress testing program should also determine what scenarios could challenge the viability of the institution (reverse stress tests). Such tests may be useful in uncovering hidden risks and interactions among risks.*

Stress tests should be geared towards events and business areas that might be particularly damaging for the institution. Areas which benefit in particular from the use of stress testing are business lines where traditional risk management models indicate an exceptionally good risk/return trade-off; new products and new markets which have not experienced severe strains; and exposures where there are no liquid two way markets.

Institutions should conduct reverse stress tests. A reverse stress test starts with a specified outcome that challenges the viability of the firm. One example of such an outcome would be that over a short time period, the firm incurs a very large loss that challenges its viability. The analysis would then work backward (reverse engineered) to identify a scenario or combination of scenarios that could bring about such a specified outcome. The reverse stress test induces institutions to consider scenarios beyond normal business settings that would include events with contagion and systemic implications.

As part of an overall stress testing program, a deposit-taking institution should aim to take account of simultaneous pressures in funding and asset markets, and the impact of a reduction in market liquidity on asset valuation. Funding and asset markets may be strongly interrelated, particularly during periods of stress. An institution should enhance its stress testing practices by considering important interrelations between various factors, including price shocks for specific asset categories; the drying-up of corresponding asset liquidity; the possibility of significant losses damaging the institution's financial strength; growth of liquidity needs as a consequence of liquidity commitments; taking on board affected assets; and diminished access to secured or unsecured funding markets.[2]

As part of an overall stress testing program at an insurance company, specific consideration should be given to important interrelations between various risk factors. For a life insurer, changes in economic conditions can significantly affect policyholder behaviour such as lapse rates, utilization of options within an insurance contract, and morbidity and recovery rates. For a property and casualty insurer, changing economic conditions will not only influence investment income and company expenses, but can also, particularly in times of inflation, lead to higher claims and loss reserves. The interrelations of various factors will depend upon the insurer's products, its investment

[2] See also *Principles for Sound Liquidity Risk Management and Supervision*, Basel Committee on Banking Supervision (September 2008).

policy and its approach to managing its business. A critical goal for insurers is to identify situations in which the assumed normal pattern of interrelationships breaks down due to a change in the business environment.

## F. Specific Areas of Focus

The following risks have proven to require specific attention in light of experience of financial market turmoil:

- Risk Mitigation
- Securitization and Warehousing Risks
- Risks to Reputation
- Counterparty Credit Risk
- Risk Concentrations

As such, stress testing should be prominent among the risk assessment tools used where these specific risks are material.

### *Risk Mitigation*

Stress testing should facilitate the development of risk mitigation or contingency plans across a range of stressed conditions. The performance of risk mitigating techniques, like reinsurance, hedging, netting and the use of collateral, should be challenged and assessed systematically under stressed conditions when markets may not be fully functioning and multiple institutions simultaneously could be pursuing similar risk mitigating strategies. Stress testing should also reflect constraints on management action and should not place undue reliance on the timeliness of mitigating actions.

### *Securitization and Warehousing Risks*

The stress testing program should explicitly cover complex and customized products such as securitized exposures. Stress tests for securitized assets should consider the underlying assets, their exposure to systemic market factors, relevant contractual arrangements and embedded triggers, and the impact of leverage, particularly as it relates to the subordination level in the issue structure.

The stress testing program should cover pipeline and warehousing risks. These are market, credit and funding risks arising in the period prior to securitization or sale and which may arise from the need to hold assets for longer periods than originally planned when markets are disrupted. An institution should include such exposures in its stress tests regardless of their probability of being securitized. Many of the risks associated with pipeline and warehoused exposures emerge when an institution is unable to access the securitization or other markets due to either institution specific or market stresses.

### *Risks to Reputation*

An institution should enhance its stress testing methodologies to capture the effect of risks to reputation. To mitigate reputational spill-over effects and maintain market confidence, an institution should have an approach to assess the impact of risks to reputation on other risk types.

The institution should integrate risks arising from off-balance sheet vehicles and other related entities in its stress testing program. An institution should carefully assess the risks associated with commitments to off-balance sheet vehicles related to structured credit securities and the possibility that assets will need to be taken on balance sheet for reputational reasons. Therefore, in its stress testing program, an institution should include scenarios assessing the size and soundness of such vehicles relative to its own financial, liquidity and regulatory capital positions. This analysis should include structural, solvency, liquidity and other risk issues, including the effects of covenants and triggers.

### *Counterparty Credit risk*

An institution may have large gross exposures to leveraged counterparties, including hedge funds, financial guarantors, investment banks and derivatives counterparties that may be particularly exposed to specific asset types and market movements. Under normal conditions, these exposures are typically completely secured by posted collateral and continuous re-margining agreements yielding zero or very small net exposures. In the case of severe market shocks, however, these exposures may increase abruptly. The potential cross-correlation of the creditworthiness of derivative counterparties with the risks of the reference assets may emerge (i.e., wrong-way risk). An institution should ensure that its stress testing approaches related to derivative counterparties are robust in their capture of such correlated tail risks.

### *Risk Concentrations*

Stress testing should consider risk concentrations resulting directly from risk taking activities as well as those resulting indirectly from actions to mitigate risks, e.g., concentrations of credit counterparty risk arising from hedges of market and insurance risk.

Risk concentrations may arise along different dimensions:

- single name concentrations
- concentrations in regions or industries
- concentrations in single risk factors
- concentrations in indirect exposures via posted collateral or hedge positions
- concentrations in off-balance sheet exposure, contingent exposure or non-contractual obligations by reputational reasons

In addition, concentrations may arise based on correlated risk factors that reflect subtler or more situation-specific factors, such as previously undetected correlations between market and credit risks, as well as between those risks and liquidity risk.

## G. Supervisory Considerations

OSFI reviews institutions' stress testing programs as part of the supervisory review process as described in the Supervisory Framework, and as part of its review of a deposit-taking institution's Internal Capital Adequacy Assessment Process (ICAAP). For insurers, one example of stress testing is Financial Condition Testing (FCT). OSFI expects to see evidence that stress testing is integrated into institutions' internal risk management processes.

OSFI uses the results of institutions' stress testing programs as important information and integrates the results into its assessment of the inherent risks and risk controls and oversight of institutions' business activities

In assessing institutions' stress testing programs, OSFI may:

i. Evaluate whether scenarios chosen are consistent with the risk appetite the institution has set for itself.

ii. Assess whether scenarios are appropriate to the portfolio of the institution and that they include severe shocks and periods of severe and sustained downturn. The scenarios chosen should also include, where relevant, an episode of market turbulence or a shock to market liquidity.

iii. Assess whether the frequency and timing of stress testing is sufficient to support timely management action. For example, stress testing and FCT are complementary initiatives. More frequent stress testing at the business unit level facilitates timely reaction to sudden market developments. It also supports the integration of the FCT process with the finalization of an annual business plan by providing timely inputs based on current information. While it is up to each institution to determine how to best integrate FCT and other stress testing into its business planning process to achieve the maximum benefits, ideally the annual FCT of an insurance company would be available to the Board of Directors, Principal Officer or Chief Agent as soon as is reasonably possible; in all cases the annual FCT should be submitted to OSFI within 30 days of its presentation to the Board of Directors, Principal Officer or Chief Agent.

iv. Ask institutions to evaluate scenarios under which viability is compromised and may ask institutions to test scenarios specific to different lines of business, to assess the plausibility of events that could materialize in significant strategic or reputational risk, in particular for business lines with significant balance sheet exposures.

v. Ask institutions, from time to time, to carry out standardized:

   - sensitivity tests for individual businesses/products given evolving market conditions or
   - scenario tests for use by OSFI to assess system wide vulnerabilities.

vi. Examine the future capital resources and capital requirements under adverse scenarios. In particular, OSFI would consider the results of forward-looking stress testing for assessing the adequacy of capital buffers.

vii. Take account of the extent to which capital might not be freely transferable within groups under adverse scenarios. OSFI would also consider the possibility a crisis impairs the ability of even very healthy institutions to raise funds at reasonable cost.

viii. Review the range of management actions envisaged by institutions in response to the results of the stress testing exercise and be able to understand the rationale for the management body decision to take or not to take remedial actions. Supervisors may challenge whether such actions will be available in a period of stress and whether the institution will realistically be able and willing to take such actions.

ix. Make recommendations to an institution to take appropriate remedial action to address weaknesses in its stress testing program.

From time to time, OSFI may conduct an analysis of the impact of system-wide stress scenarios. OSFI intends as much as possible to test the impact of these system-wide scenarios using information that is reported in regulatory returns or regularly collected as part of the supervisory review process in order to minimize data calls on institutions.

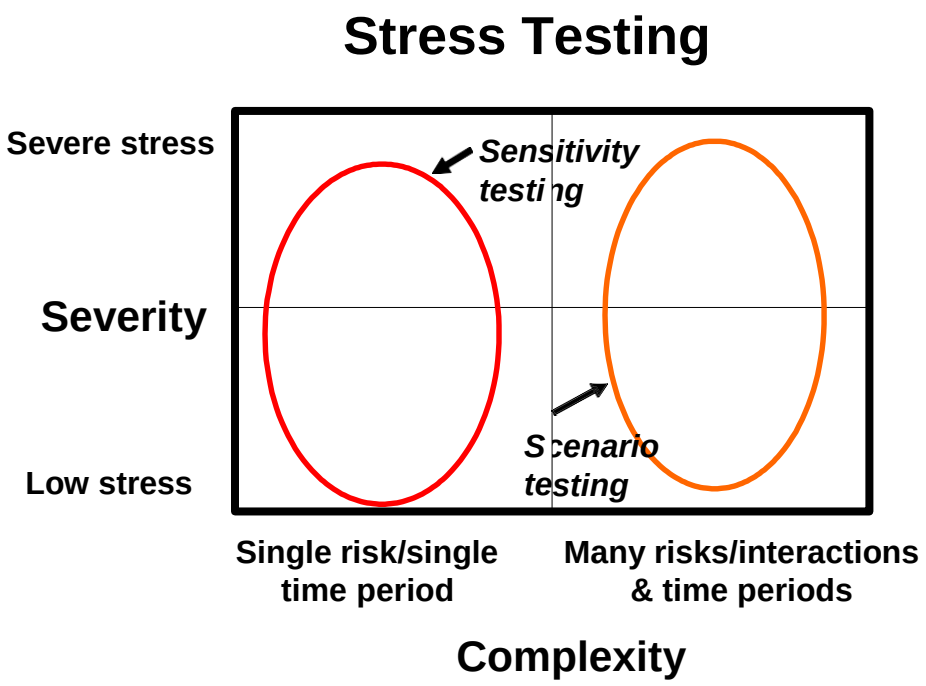
## Glossary

### Scenario testing:

Scenario testing uses a hypothetical future state of the world to define changes in risk factors affecting an institution's operations. This will normally involve changes in a number of risk factors, as well as ripple effects that are other impacts that follow logically from these changes and related management and regulatory actions. Scenario testing is typically conducted over the time horizon appropriate for the business and risks being tested.

### Sensitivity testing:

Sensitivity testing typically involves an incremental change in a risk factor (or a limited number of risk factors). It is typically conducted over a shorter time horizon, for example an instantaneous shock. Sensitivity testing requires fewer resources than scenario testing and can be used as a simpler technique for assessing the impact of a change in risks when a quick response or when more frequent results are needed.



Office of the Superintendent of Financial Institutions Canada
Bureau du surintendant des institutions financières Canada

# SUPERVISORY FRAMEWORK

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# SUPERVISORY FRAMEWORK

## OSFI'S ROLE

The Office of the Superintendent of Financial Institutions (OSFI) is an independent agency of the Government of Canada established in 1987 to contribute to public confidence in, and the safety and soundness of, the Canadian financial system. OSFI supervises and regulates federally registered banks and insurers, trust and loan companies, cooperative credit associations, and fraternal benefit societies, as well as private pension plans subject to federal oversight, and ensures that they are complying with their governing legislation.

When OSFI identifies issues that may impact the stability of the financial system, it reports them to the Financial Institutions Supervisory Committee[1].

OSFI supervises financial institutions in accordance with its Supervisory Framework, first introduced in 1999 and updated in 2010 in this document. Supervision of pension plans is guided by a similar but separate Framework[2].

[1] The Financial Institutions Supervisory Committee ("FISC") meets on a quarterly basis to facilitate the exchange of information among OSFI, the Department of Finance, the Bank of Canada, Canada Deposit Insurance Corporation, and the Financial Consumer Agency of Canada on matters relating to the supervision of federally regulated financial institutions.

[2] Available on OSFI's website, under "Pension Plans/Risk Assessment Framework".

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# INTRODUCTION

## THE SUPERVISORY FRAMEWORK

The Supervisory Framework describes the principles, concepts, and core process that OSFI uses to guide its supervision of federally regulated financial institutions (FRFIs). These principles, concepts, and core process apply to all FRFIs in Canada, irrespective of their size, and accommodate the unique aspects of the deposit-taking, life insurance, and property and casualty insurance sectors.

Supervision involves assessing the safety and soundness of FRFIs, providing feedback as appropriate, and using powers for timely intervention where necessary. Its primary goal is to safeguard depositors and policyholders from loss. As such, the focus of supervisory work is determining the impact of current and potential future events, both internal to a FRFI and from its external environment, on the risk profile of the FRFI.

SUPERVISION'S PRIMARY GOAL IS TO SAFEGUARD DEPOSITORS AND POLICYHOLDERS FROM LOSS.

Since OSFI's Supervisory Framework was first introduced in 1999, significant developments in the financial services industry have changed the nature of the risks and risk management of financial institutions. For example, product sophistication has increased, globalization has caused risks to become more systemic, and financial institutions have experienced multiple and severe stresses to their solvency and liquidity. Meanwhile, international standards and requirements for supervising financial institutions have also been strengthened.

The updated Supervisory Framework described in this document reflects the enhancements OSFI has made to address these changes, and the experience gained from applying the 1999 Framework over the past ten years. In summary, these enhancements continue to make OSFI's risk-based supervision as dynamic and forward-looking as possible and help ensure that OSFI can respond effectively to changes in the Canadian and international financial sectors, now and in the future.

## STATUTORY OBLIGATIONS

The Supervisory Framework is designed to assist OSFI in meeting its statutory obligations set out in the *Office of the Superintendent of Financial Institutions Act (OSFI Act)* and other governing legislation regarding the supervision of FRFIs. These obligations are broad and overarching, and to meet them in practice requires detailed and consistent standards and criteria for supervising FRFIs.

## INTERNATIONAL EXPECTATIONS

OSFI has adopted the Basel Committee on Banking Supervision's "Core Principles for Effective Banking Supervision", and the International Association of Insurance Supervisors' "Insurance core principles and methodology" as its sources for detailed supervisory standards and criteria. These methodologies specify international expectations for banking and insurance supervision. OSFI applies these methodologies within the context of its mandate and the nature of the financial services industry in Canada.

# GENERAL APPROACH

## CONSOLIDATED SUPERVISION

The supervision of Canadian financial institutions is conducted on a consolidated basis, which involves an assessment of all of a FRFI's material entities (including all subsidiaries, branches and joint ventures), both in Canada and internationally. OSFI uses information available from other regulators as appropriate.

## RELATIONSHIP MANAGER

OSFI designates a relationship manager (RM) for each FRFI. The RM is responsible for maintaining an up-to-date risk assessment of the FRFI. Specialists and other staff within OSFI help support this work. The RM is the main point of contact for the FRFI.

## PRINCIPLES-BASED SUPERVISION

The supervision of FRFIs is principles-based. It requires the application of sound judgment in identifying and assessing risks, and determining, from a wide variety of supervisory and regulatory options available, the most appropriate method to ensure that the risks that a FRFI faces are adequately managed.

## SUPERVISORY INTENSITY AND INTERVENTION

The intensity of supervision will depend on the nature, size, complexity and risk profile of a FRFI, and the potential consequences of the FRFI's failure. Where there are identified risks or areas of concern, the degree of intervention will be commensurate with the risk assessment, and in accordance with the Guide to Intervention for Federal Financial Institutions[3].

## BOARD AND SENIOR MANAGEMENT ACCOUNTABILITY

A FRFI's Board of Directors and Senior Management are responsible for the management of the FRFI and ultimately accountable for its safety and soundness and compliance with governing legislation. OSFI's mandate to supervise includes apprising FRFIs of situations having material risk that it has identified during its work, and recommending or requiring corrective actions to be taken. OSFI also looks to the Board and Senior Management to be proactive in providing OSFI with timely notification of important issues affecting the FRFI.

## RISK TOLERANCE

While OSFI's supervision will reduce the likelihood that FRFIs will fail, the *OSFI Act* explicitly recognizes that FRFIs operate in a competitive environment and need to take reasonable risks. As such, FRFIs can experience financial difficulties that could lead to their failure.

## RELIANCE ON EXTERNAL AUDITORS

OSFI relies upon FRFIs' external auditors for the fairness of the financial statements. OSFI's assessment of a FRFI's overall financial performance depends upon the FRFI's audited financial statements.

[3] Available on OSFI's website, under "About OSFI/How We Regulate".

### USE OF THE WORK OF OTHERS

OSFI uses, where appropriate, the work of others to reduce the scope of its supervisory work and minimize duplication of effort. This enhances both OSFI's efficiency and its effectiveness. For example, as supervisors do not perform audit work, they may use the detailed testing performed by a FRFI's external auditor and Internal Audit function to help them assess the effectiveness of controls. Similarly, they may use the detailed analysis performed by a FRFI's Risk Management function to help them assess the effectiveness of the FRFI's models.

External sources of work that may be of use to OSFI are the FRFI's external auditor and appointed actuary, as well as the FRFI's oversight functions, which include the Financial, Compliance, Actuarial, Risk Management, Internal Audit, Senior Management and Board functions. Other useful external sources include rating agencies, industry groups, foreign regulators, consultants, and other domestic and international organizations.

## KEY PRINCIPLES

Risk assessment—the fundamental work activity of supervision—is undertaken by following seven key principles.

### PRINCIPLE #1

#### FOCUS ON MATERIAL RISK

The risk assessment OSFI performs in its supervisory work is focused on identifying material risk to a FRFI, such that there is the potential for loss to depositors or policyholders.

### PRINCIPLE #2

#### FORWARD-LOOKING, EARLY INTERVENTION

Risk assessment is forward-looking. This view facilitates the early identification of issues or problems, and timely intervention where corrective actions need to be taken, so that there is a greater likelihood of the satisfactory resolution of issues.

### PRINCIPLE #3

#### SOUND PREDICTIVE JUDGMENT

Risk assessment relies upon sound, predictive judgment. To ensure adequate quality, OSFI management requires that these judgments have a clear, supported rationale.

### PRINCIPLE #4

#### UNDERSTANDING THE DRIVERS OF RISK

Risk assessment requires understanding the drivers of material risk to a FRFI. This is facilitated by sufficient knowledge of the FRFI's business model (i.e., products and their design, activities, strategies and risk appetite), as well as the FRFI's external environment. The understanding of how risks may develop and how severe they may become is important to the early identification of issues at a FRFI.

### PRINCIPLE #5

#### DIFFERENTIATE INHERENT RISKS AND RISK MANAGEMENT

Risk assessment requires differentiation between the risks inherent to the activities undertaken by the FRFI, and the FRFI's management of those risks – at both the operational and oversight levels. This differentiation is crucial to establishing expectations for the management of the risks and to determining appropriate corrective action, when needed.

### PRINCIPLE #6

#### DYNAMIC ADJUSTMENT

Risk assessment is continuous and dynamic in order that changes in risk, arising from both the FRFI and its external environment, are identified early. OSFI's core supervisory process is flexible, whereby identified changes in risk result in updated priorities for supervisory work.

### PRINCIPLE #7

#### ASSESSMENT OF THE WHOLE INSTITUTION

The application of the Supervisory Framework culminates in a consolidated assessment of risk to a FRFI. This holistic assessment combines an assessment of earnings and capital in relation to the overall net risk from the FRFI's significant activities, as well as an assessment of the FRFI's liquidity, to arrive at this composite view.

## PRIMARY RISK ASSESSMENT CONCEPTS

The Supervisory Framework uses many concepts to enable a common approach to risk assessment across FRFIs and over time. The primary concepts are described below.

### 1. SIGNIFICANT ACTIVITIES

The fundamental risk assessment concept within the Supervisory Framework is that of a significant activity. A significant activity is a line of business, unit or process that is fundamental to the FRFI's business model and its ability to meet its overall business objectives (i.e., if the activity is not well managed, there is a significant risk to the organization as a whole in terms of meeting its goals).

OSFI identifies significant activities using various sources including the FRFI's organization charts, strategic business plan, capital allocations, and internal and external reporting. This facilitates a close alignment between OSFI's assessment of the FRFI and the FRFI's own organization and management of its risks, and enables OSFI to make use of the FRFI's information and analysis in its risk assessment.

Judgment is used in selecting significant activities, which may be chosen for quantitative reasons (such as the activity's percentage of total FRFI assets, revenue, premiums written, net income, allocated capital, or its potential for material losses), and/or qualitative reasons (such as its strategic importance, planned growth, risk, effect on brand value or reputation, or the criticality of an enterprise-wide process).

## 2. INHERENT RISK

In the Supervisory Framework, the key inherent risks are assessed for each significant activity of a FRFI. The definition of inherent risk is directly related to OSFI's mandate to protect depositors and policyholders. Inherent risk is the probability of a material loss due to exposure to, and uncertainty arising from, current and potential future events. A material loss is a loss or combination of losses that could impair the adequacy of the capital of a FRFI such that there is the potential for loss to depositors or policyholders.

Inherent risk is intrinsic to a significant activity and is assessed without regard to the size of the activity relative to the size of the FRFI, and before considering the quality of the FRFI's risk management. A thorough understanding of both the nature of the FRFI's activities and the environment in which these activities operate is essential to identify and assess inherent risk.

OSFI uses the following six categories to assess inherent risk: credit risk; market risk; insurance risk; operational risk; regulatory compliance risk; and strategic risk. For each significant activity, the key inherent risks are identified and their levels are assessed as **low, moderate, above average,** or **high**. The categories and levels of inherent risk are described in more detail in Appendix A.

OSFI does not view reputational risk as a separate category of inherent risk. It is a consequence of each of the six inherent risk categories. Accordingly, it is an important consideration in the assessment of each inherent risk category.

Based on the key inherent risks identified for a significant activity and their levels, supervisors develop expectations for the quality of risk management. The higher the level of inherent risk, the more rigorous the day-to-day controls and oversight expected. State-of-the-art controls are expected where appropriate.

## 3. QUALITY OF RISK MANAGEMENT

OSFI assesses the quality of risk management (QRM) at two levels of control. These are:

### OPERATIONAL MANAGEMENT

Operational management for a given significant activity is primarily responsible for the controls used to manage all of the activity's inherent risks on a day-to-day basis. Operational management ensures that there is a clear understanding by FRFI line staff of the risks that the activity faces and must manage, and that policies, processes, and staff are sufficient and effective in managing these risks. When assessing operational management, OSFI's primary concern is whether operational management is capable of identifying the potential for material loss that the activity may face, and has in place adequate controls.

> INHERENT RISK IS THE PROBABILITY OF A MATERIAL LOSS DUE TO EXPOSURE TO, AND UNCERTAINTY ARISING FROM, CURRENT AND POTENTIAL FUTURE EVENTS.

In general, the extent to which OSFI needs to review the effectiveness of operational management of a significant activity depends on the effectiveness of the FRFI's oversight functions (see page 6). In a FRFI with sufficient and effective oversight functions, it may often be possible for OSFI to assess the effectiveness of operational management for a given activity using the work of the oversight functions. However, this approach does not preclude the need for OSFI to periodically validate that key day-to-day controls are effective.

### OVERSIGHT FUNCTIONS

Oversight functions are responsible for providing independent, enterprise-wide oversight of operational management. There are seven oversight functions that may exist in a FRFI: Financial; Compliance; Actuarial; Risk Management; Internal Audit; Senior Management; and the Board (see Appendix B). The presence and nature of these functions are expected to vary based on the nature, size and complexity of a FRFI and its inherent risks. Where a FRFI lacks some of the oversight functions, they are not sufficiently independent, or they don't have enterprise-wide responsibility, OSFI expects other functions, within or external to the FRFI, to provide the independent oversight needed.

For each significant activity, OSFI assesses operational management and each of the relevant oversight functions as **strong, acceptable, needs improvement,** or **weak**. The appropriate rating is determined by comparing the nature and levels of the FRFI's controls or oversight to OSFI's expectations developed when assessing the levels of the key inherent risks.

THE IMPORTANCE OF THE NET RISK OF THE SIGNIFICANT ACTIVITY IS A JUDGMENT OF ITS CONTRIBUTION TO THE OVERALL RISK PROFILE OF THE FRFI.

For each relevant oversight function present in a FRFI, OSFI also determines an overall rating (**strong, acceptable, needs improvement,** or **weak**) that reflects the quality of the function's oversight across the entire FRFI (see Appendix B). OSFI has Assessment Criteria that guide the determination of the overall rating for each oversight function. The assessment includes a determination of the direction of the quality of oversight (**improving, stable,** or **deteriorating**).

## 4. NET RISK

***NET RISK** IS **INHERENT RISK(S)*** AFTER MITIGATION BY ***QRM***

For each significant activity, the level of net risk is determined based on judgment that considers all of the key inherent risk ratings and relevant QRM ratings for the activity. Net risk is rated **low, moderate, above average,** or **high**. Appendix C shows typical net risk ratings for combinations of inherent risk and QRM ratings. The net risk assessment includes a determination of the direction of net risk (**decreasing, stable,** or **increasing**).

OSFI expects a FRFI to maintain controls and oversight that are commensurate with the key inherent risks, so that levels of net risk are considered prudent by OSFI. Where levels of net risk are considered imprudent, a FRFI is expected to address the situation by either improving QRM or reducing inherent risk.

## 5. IMPORTANCE AND OVERALL NET RISK

The importance of the net risk of the significant activity is a judgment of its contribution to the overall risk profile of the FRFI. Importance is rated as **low, medium,** or **high**. The significant activities assigned higher importance ratings are the key drivers of the overall risk profile.

The net risks of the significant activities are combined, by considering their relative importance, to arrive at the Overall Net Risk of the FRFI. The Overall Net Risk is an assessment of the potential adverse impact that the significant

activities of the FRFI collectively could have on the earnings performance and adequacy of the capital of the FRFI, and hence on the depositors or policyholders. Overall Net Risk is rated as **low, moderate, above average,** or **high**, and the direction is assessed as **decreasing, stable,** or **increasing**.

## 6. EARNINGS

Earnings are an important contributor to a FRFI's long-term viability. Earnings are assessed based on their quality, quantity and consistency as a source of internally-generated capital. The assessment takes into consideration both historical trends and the future outlook, under both normal and stressed conditions. Earnings are assessed in relation to the FRFI's Overall Net Risk.

Earnings are rated as **strong, acceptable, needs improvement,** or **weak**, and their direction is assessed as **improving, stable,** or **deteriorating**.

## 7. CAPITAL

Adequate capital is critical for the overall safety and soundness of FRFIs. Capital is assessed based on the appropriateness of its level and quality, both at present and prospectively, and under both normal and stressed conditions, given the FRFI's Overall Net Risk. In the case of foreign branches, OSFI considers the adequacy of capital equivalency deposits and vested assets. The effectiveness of the FRFI's capital management processes for maintaining adequate capital relative to the risks across all of its significant activities is also considered in the assessment. FRFIs with higher Overall Net Risk are expected to maintain a higher level and quality of capital and stronger capital management processes.

Capital is rated as **strong, acceptable, needs improvement,** or **weak**, and its direction is assessed as **improving, stable,** or **deteriorating**.

## 8. LIQUIDITY

Adequate balance sheet liquidity is critical for the overall safety and soundness of FRFIs. OSFI assesses liquidity at a FRFI by considering the level of its liquidity risk and the quality of its liquidity management. Liquidity risk arises from a FRFI's potential inability to purchase or otherwise obtain the necessary funds to meet its on- and off-balance sheet obligations as they come due. The level of liquidity risk depends on the FRFI's balance sheet composition, its funding sources, its liquidity strategy, and market conditions and events. FRFIs are required to maintain, both at present and prospectively, a level of liquidity risk and liquidity management processes that are prudent, under both normal and stressed conditions.

Liquidity is rated as **strong, acceptable, needs improvement,** or **weak**, and the direction is assessed as **improving, stable,** or **deteriorating**.

## 9. THE RISK MATRIX AND COMPOSITE RISK RATING

A Risk Matrix (see Appendix D) is used to record all of the assessments described above. The purpose of the Risk Matrix is to facilitate a holistic risk assessment of a FRFI. This assessment culminates in a Composite Risk Rating (CRR).

The CRR is an assessment of the FRFI's risk profile, after considering the assessments of its earnings and capital in relation to the Overall Net Risk from its significant activities, and the assessment of its liquidity. The CRR is OSFI's assessment of the safety and soundness of the FRFI with respect to its depositors and policyholders. The assessment is over a time horizon that is appropriate for the FRFI, given changes occurring internally and in its external environment. Composite Risk is rated **low, moderate, above average** or **high**. The assessment is supplemented by the Direction of Composite Risk, which is OSFI's assessment of the most likely direction in

which the CRR may move. The Direction of Composite Risk is rated as **decreasing, stable,** or **increasing**.

The CRR of a FRFI is used in determining its stage of intervention, which is described in the Guide to Intervention for Federal Financial Institutions. Appendix E shows the combinations of Composite Risk Ratings and intervention ratings usually assigned.

While the Risk Matrix is a convenient way to summarize OSFI's conclusions of risk assessment, it is supported by detailed documentation of the analysis and rationale for the conclusions.

# THE CORE SUPERVISORY PROCESS

OSFI uses a defined process to guide its FRFI-specific supervisory work: the first step is planning supervisory work; the second is executing supervisory work and updating the risk profile; and the third is reporting and intervention. This process is dynamic, iterative and continuous, as shown below:

Performing supervisory work in this fashion helps keep OSFI's risk assessments current and future oriented, which is vital to its ongoing effectiveness.

## 1. PLANNING SUPERVISORY WORK

A supervisory strategy for each FRFI is prepared annually. The supervisory strategy identifies the supervisory work necessary to keep the FRFI's risk profile current. The intensity of supervisory work depends on the nature, size, complexity and risk profile of the FRFI.

The supervisory strategy outlines the supervisory work planned for the next three years, with a fuller description of work for the upcoming year. The supervisory strategy is the basis for a more detailed annual plan, which indicates the expected work and resource allocations for the upcoming year.

Supervisory work for each significant activity is planned and prioritized after considering the net risk assessment of the activity (including the types and levels of inherent risk, the quality of risk management, and any potential significant changes in these), the need to update OSFI's information on the activity (due to information decay), and the importance of the activity. Similarly, supervisory work for each relevant oversight function is planned and prioritized after considering the assessment of the quality of its oversight, and the need to update OSFI's information on the function.

In addition to FRFI-specific planning, OSFI's planning also includes a process to compare the work effort across FRFIs. This is done to ensure that assessments of risk for individual FRFIs are subject to a broader standard, and that supervisory resources are allocated effectively to higher-risk FRFIs and significant activities.

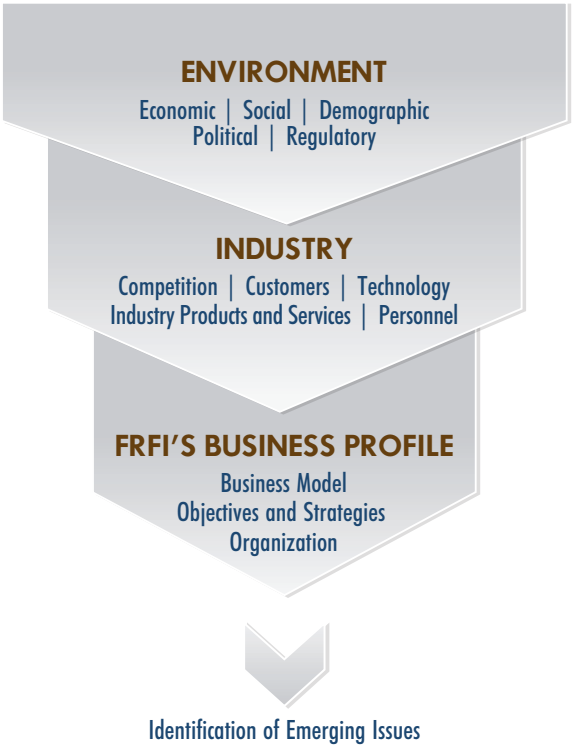
## 2. EXECUTING SUPERVISORY WORK AND UPDATING THE RISK PROFILE

There is a continuum of supervisory work that ranges from monitoring (FRFI-specific and external), to limited off-site reviews, to extensive on-site reviews, including testing or sampling where necessary.

Monitoring refers to the regular review of information on the FRFI and its industry and environment, to keep abreast of changes that are occurring or planned in the FRFI and externally, and to identify emerging issues.

FRFI-specific monitoring includes the analysis of the FRFI's financial results, typically considering its performance by business line and vis-à-vis its peers, and any significant internal developments. It may also extend to gathering information on non-regulated entities which have a significant influence on the FRFI, such as a holding company or foreign parent company. FRFI-specific monitoring usually also includes discussions with the FRFI's management, including oversight functions.

Given the dynamic environment in which FRFIs operate, OSFI also continuously scans the external environment and industry, gathering information as broadly as possible, to identify emerging issues. Issues include both FRFI-specific and system-wide concerns. OSFI periodically requires FRFIs to perform specific stress tests which OSFI uses to assess the potential impact of changes in the operating environment on individual FRFIs or industries. Environmental scanning and stress testing have increased in importance since the Supervisory Framework was first introduced in 1999; changes in the external environment are a main driver of rapid changes in FRFI risk profiles.




Reviews refer to more extensive supervisory work than monitoring. The nature and scope of information reviewed, and the location of the review ("off-site" at OSFI premises when the scope of the review is limited or "on-site" at the FRFI's premises when the scope is more extensive), are based on the specific requirements identified in the planning process. When an on-site review is conducted, OSFI may request information from the FRFI in advance. Reviews include discussions with FRFI management, including oversight functions.

In addition to the core supervisory work of monitoring and reviews, OSFI frequently undertakes comparative or benchmarking reviews to identify standard and best industry practices.

As supervisory work is conducted, the RM updates the overall risk profile of the FRFI. The Risk Matrix and supporting documentation detail OSFI's

formal assessment of the FRFI's business model and associated safety and soundness, both current and prospective. Key documents are subject to sign-off protocols within OSFI.

When there are shifts in the risk assessment of the FRFI, OSFI responds by adjusting work priorities set out in the supervisory strategy and annual plan, as necessary, to ensure that important matters emerging take precedence over items of lesser risk. Such flexibility is vital to OSFI's ability to meet its legislated mandate.

## 3. REPORTING AND INTERVENTION

### TO FRFIs

In addition to ongoing discussions with FRFI management, OSFI communicates to FRFIs through various formal, written reports.

Annually, or as appropriate, the RM writes a Supervisory Letter to the FRFI. The Supervisory Letter is the primary written communication to the FRFI. It summarizes OSFI's key findings and recommendations (and requirements, as necessary) based on the supervisory work that was conducted since the last Supervisory Letter was issued, and discloses or affirms the FRFI's Composite Risk Rating.

Supervisory Letters to Canadian companies are addressed to the Chief Executive Officer (CEO) and copied to the Chair of the Audit Committee (and Risk Committee, where applicable). Supervisory Letters to Canadian branches of foreign companies are addressed to the Principal Officer or Chief Agent of the branch. Where there are significant issues with a Canadian branch or subsidiary of a foreign company, a copy of the Supervisory Letter is sent to the CEO and the Chair of the Audit Committee at the home office or parent company. In all cases, OSFI requests that a copy of the Supervisory Letter be provided to the external auditor, and to the appointed actuary where applicable.

During the year, OSFI may also issue an Interim Letter to the FRFI so as to provide the FRFI with timely feedback on issues arising from a specific body of supervisory work. The Interim Letter is sent to the appropriate senior manager within the FRFI, and a copy may also be provided to other individuals within the FRFI, if warranted.

With both types of letters, findings and recommendations are discussed with the FRFI before the letter is issued. A letter is generally issued within 45 calendar days of the completion of a review. The FRFI is typically asked to provide a response within 30 calendar days. OSFI analyzes the FRFI's response for appropriateness, and follows up on the FRFI's actions on a timely basis.

Both types of letters remind FRFIs that applicable Supervisory Information Regulations prohibit them from disclosing, directly or indirectly, prescribed supervisory information, including Supervisory Letters, except as provided for in the regulations.

### TO OTHER CANADIAN AND FOREIGN REGULATORS

OSFI shares its letters with the Canada Deposit Insurance Corporation (CDIC) and provincial regulators with whom it has agency agreements. Reporting to these parties is in accordance with their respective agreements.

In accordance with the *OSFI Act*, OSFI is also permitted to share information pertaining to compliance with Part 1 of the *Proceeds of Crime (Money Laundering) and Terrorist Financing Act* with the Financial Transactions and Reports Analysis Centre of Canada (FINTRAC).

In addition, OSFI shares information, as appropriate, with foreign regulators with which it has a home-host relationship and a Memorandum of Understanding. Such information-sharing may take place when OSFI hosts or attends supervisory colleges.

In all cases, the confidentiality of information is respected.

### FINANCIAL INSTITUTIONS SUPERVISORY COMMITTEE ("FISC") AND SENIOR ADVISORY COMMITTEE ("SAC")[4]

As part of its ongoing supervisory work, OSFI monitors FRFIs and also scans the financial system in which they operate. In doing so, OSFI is able to identify issues that may impact the stability of the financial system. Where OSFI identifies such issues, it reports them to FISC and/or SAC, as appropriate, for further discussion and the determination of any necessary actions.

Information received from FISC and SAC members according to their unique mandates also, in turn, informs OSFI's environmental scanning and identification of broad issues that may impact specific FRFIs.

### TO THE MINISTER OF FINANCE

OSFI reports annually to the Minister of Finance on the safety and soundness of FRFIs and their compliance with the governing legislation.

[4] The Senior Advisory Committee ("SAC") is a non-statutory body chaired by the Deputy Minister of Finance. The membership of the SAC is the same as FISC. The SAC operates as a consultative body and provides a forum for policy discussion on issues pertaining to the financial sector.

# APPENDIX A – INHERENT RISK CATEGORIES AND RATINGS

## CATEGORIES

### CREDIT RISK

Credit risk arises from a counterparty's potential inability or unwillingness to fully meet its on- and/or off-balance sheet contractual obligations. Exposure to this risk occurs any time funds are extended, committed, or invested through actual or implied contractual agreements.

Components of credit risk include: loan loss/ principal risk, pre-settlement/replacement risk and settlement risk.

Counterparties include: issuers, debtors, borrowers, brokers, policyholders, reinsurers and guarantors.

### MARKET RISK

Market risk arises from potential changes in market rates, prices or liquidity in various markets such as for interest rates, credit, foreign exchange, equities, and commodities. Exposure to this risk results from trading, investment, and other business activities which create on- and off-balance sheet positions.

Positions include: traded instruments, investments, net open (on- and off-) balance sheet positions, assets and liabilities, and can be either cash or derivative (linear or options-related).

### INSURANCE RISK

Insurance risk arises from the potential for claims or payouts to be made to policyholders or beneficiaries. Exposure to this risk results from adverse events occurring under specified perils and conditions covered by the terms of an insurance policy. Typical insured perils include: accident, injury, liability, catastrophe, mortality, longevity, and morbidity.

Insurance risk includes uncertainties around:

a) the ultimate amount of net cash flows from premiums, commissions, claims, payouts, and related settlement expenses,

b) the timing of the receipt and payment of these cash flows, and

c) policyholder behavior (e.g., lapses).

Although the business of insurance contributes to the investment portfolio of an insurer, actual or imputed investment returns are not elements of insurance risk.

### OPERATIONAL RISK

Operational risk arises from potential problems due to inadequate or failed internal processes, people and systems, or from external events. Operational risk includes legal risk i.e., potential unfavourable legal proceedings. Exposure to

operational risk results from either normal day-to-day operations (such as deficiencies or breakdowns in respect of transaction processing, fraud, physical security, money laundering and terrorist financing, data/information security, information technology systems, modeling, outsourcing, etc.) or a specific, unanticipated event (such as Enron-like litigation, court interpretations of a contract liability, natural disasters, loss of a key person, etc.).

### REGULATORY COMPLIANCE RISK

Regulatory compliance risk arises from a FRFI's potential non-conformance with laws, rules, regulations, prescribed practices, or ethical standards in any jurisdiction in which it operates.

### STRATEGIC RISK

Strategic risk arises from a FRFI's potential inability to implement appropriate business plans and strategies, make decisions, allocate resources, or adapt to changes in its business environment.

## RATINGS

A material loss is a loss or combination of losses that could impair the adequacy of the capital of a FRFI such that there is the potential for loss to depositors or policyholders.

### LOW

Low inherent risk exists when there is a lower than average probability of a material loss due to exposure to, and uncertainty arising from, current and potential future events.

### MODERATE

Moderate inherent risk exists when there is an average probability of a material loss due to exposure to, and uncertainty arising from, current and potential future events.

### ABOVE AVERAGE

Above average inherent risk exists when there is an above average probability of a material loss due to exposure to, and uncertainty arising from, current and potential future events.

### HIGH

High inherent risk exists when there is a higher than above average probability of a material loss due to exposure to, and uncertainty arising from, current and potential future events.

# APPENDIX B – QUALITY OF RISK MANAGEMENT CATEGORIES AND OVERALL RATINGS

## CATEGORIES

### OPERATIONAL MANAGEMENT

Operational management is responsible for planning, directing and controlling the day-to-day operations of a significant activity of a FRFI.

### OVERSIGHT FUNCTIONS

#### *Financial*

Financial is an independent function responsible for ensuring the timely and accurate reporting and in-depth analysis of the operational results of a FRFI in order to support decision-making by Senior Management and the Board. Its responsibilities include:

- providing financial analysis of the FRFI's and business line/unit performance and the major business cases to Senior Management and the Board, highlighting matters requiring their attention; and
- ensuring an effective financial reporting and management information system.

THE PRESENCE AND NATURE OF OVERSIGHT FUNCTIONS ARE EXPECTED TO VARY BASED ON THE NATURE, SIZE AND COMPLEXITY OF A FRFI AND ITS INHERENT RISKS.

#### *Compliance*

Compliance (including the Chief Anti-Money Laundering Officer) is an independent function with the following responsibilities:

- setting the policies and procedures for adherence to regulatory requirements in all jurisdictions where the FRFI operates;
- monitoring the FRFI's compliance with these policies and procedures; and
- reporting on compliance matters to Senior Management and the Board.

#### *Actuarial*

Actuarial is an independent function, applicable only to FRFIs with insurance business, with responsibilities beyond the legal requirements of the appointed actuary that could include the following:

- evaluating the design, pricing and valuation of the insurance products offered by the FRFI;
- assessing the reasonableness of provisions set for policy liabilities, and the appropriateness of the process followed;
- reviewing models used to determine exposures, and the adequacy of reinsurance programs to mitigate these exposures;
- analyzing stress testing results, and the process used, to establish the adequacy of capital and capital planning for the FRFI under adverse conditions; and

- reporting on the results of its work to Senior Management and the Board.

### *Risk Management*

Risk Management is an independent function responsible for the identification, assessment, monitoring, and reporting of risks arising from the FRFI's operations. Its responsibilities typically include:

- identifying enterprise-wide risks;
- developing systems or models for measuring risk;
- establishing policies and procedures to manage risks;
- developing risk metrics (e.g., stress tests) and associated tolerance limits;
- monitoring positions against approved risk tolerance limits and capital levels; and
- reporting results of risk monitoring to Senior Management and the Board.

### *Internal Audit*

Internal Audit is an independent function with responsibilities that include:

- assessing adherence to, and the effectiveness of, operational controls and oversight, including corporate governance processes; and
- reporting on the results of its work on a regular basis to Senior Management and directly to the Board.

### *Senior Management*

Senior Management is responsible for directing and overseeing the effective management of the general operations of the FRFI. Its key responsibilities include:

- developing, for Board approval, the business model and associated objectives, strategies, plans, organizational structure and controls, and policies;
- developing and promoting (in conjunction with the Board) sound corporate governance practices, culture and ethics, which includes aligning employee compensation with the longer-term interests of the FRFI;
- executing and monitoring the achievement of Board-approved business objectives, strategies, and plans and the effectiveness of organizational structure and controls; and
- ensuring that the Board is kept well informed.

### *Board*

The Board is responsible for providing stewardship and oversight of management and operations of the entire FRFI. Its key responsibilities include:

- guiding, reviewing and approving the business model and associated objectives, strategies and plans;
- reviewing and approving corporate risk policy including overall risk appetite and tolerance;
- ensuring that Senior Management is qualified and competent;

- reviewing and approving organizational and procedural controls;
- ensuring that principal risks are identified and appropriately managed;
- ensuring that compensation for employees, Senior Management and the Board is aligned with the longer term interests of the FRFI;
- reviewing and approving policies for major activities; and
- providing for an independent assessment of management controls.

## OVERALL RATINGS

### STRONG

The characteristics (e.g., mandate, organization structure, resources, methodologies, practices) of the function exceed what is considered necessary, given the nature, scope, complexity, and risk profile of the FRFI. The function has consistently demonstrated highly effective performance. The function's characteristics and performance are superior to sound industry practices.

### ACCEPTABLE

The characteristics (e.g., mandate, organization structure, resources, methodologies, practices) of the function meet what is considered necessary, given the nature, scope, complexity, and risk profile of the FRFI. The function's performance has been effective. The function's characteristics and performance meet sound industry practices.

### NEEDS IMPROVEMENT

The characteristics (e.g., mandate, organization structure, resources, methodologies, practices) of the function generally meet what is considered necessary, given the nature, scope, complexity, and risk profile of the FRFI, but there are some significant areas that require improvement. The function's performance has generally been effective, but there are some significant areas where effectiveness needs to be improved. The areas needing improvement are not serious enough to cause prudential concerns if addressed in a timely manner. The function's characteristics and/or performance do not consistently meet sound industry practices.

### WEAK

The characteristics (e.g., mandate, organization structure, resources, methodologies, practices) of the function are not, in a material way, what is considered necessary, given the nature, scope, complexity, and risk profile of the FRFI. The function's performance has demonstrated serious instances where effectiveness needs to be improved through immediate action. The function's characteristics and/or performance often do not meet sound industry practices.

# APPENDIX C – TYPICAL NET RISK RATINGS

The chart below shows typical net risk ratings for combinations of inherent risk and QRM ratings.

| Aggregate Quality of Risk Management for a Significant Activity | Level of Inherent Risk for a Significant Activity | | | |
|---|---|---|---|---|
| | Low | Moderate | Above Average | High |
| | Net Risk Assessment | | | |
| Strong | Low | Low | Moderate | Above Average |
| Acceptable | Low | Moderate | Above Average | High |
| Needs Improvement | Moderate | Above Average | High | High |
| Weak | Above Average | High | High | High |

# APPENDIX D – RISK MATRIX

| Significant Activities | Inherent Risks | | | | | | Quality of Risk Management | | | | | | | | Net Risk | Direction of Risk | Importance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Credit | Market | Insurance | Operational | Regulatory Compliance | Strategic | Operational Management | Financial | Compliance | Actuarial | Risk Management | Internal Audit | Senior Management | Board | | | |
| Activity 1 | | | | | | | | | | | | | | | | | |
| Activity 2 | | | | | | | | | | | | | | | | | |
| Activity 3 | | | | | | | | | | | | | | | | | |
| Etc. | | | | | | | | | | | | | | | | | |
| Overall Rating | | | | | | | | | | | | | | | | | |

| | Rating | Direction | Time Frame |
|---|---|---|---|
| Earnings | | | |
| Capital | | | |
| Liquidity | | | |
| Composite Risk | | | |

| Intervention Rating | |
|---|---|

# APPENDIX E – ALIGNMENT BETWEEN COMPOSITE RISK RATINGS AND INTERVENTION RATINGS

| Composite Risk Rating | Intervention Rating |
|---|---|
| Low | 0 Normal |
| Moderate | 0 Normal |
| | 1 Early warning |
| Above Average | 1 Early warning |
| | 2 Risk to financial viability or solvency |
| High | 2 Risk to financial viability or solvency |
| | 3 Future financial viability in serious doubt |
| | 4 Non-viable/insolvency imminent |

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> Office of the Superintendent of Financial Institutions Canada, Core Financial Statement Return (PC1), Approved by the Canadian Council of Insurance Regulators, 2023.
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> NOTE: Please use the 2023 Return that has been archived on the CAS website for educational purposes.

Candidates may wish to review illustrations of sample Annual Return schedules (please use the link provided on the CAS Web Site). These illustrations are for information only and will not be directly tested

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Office of the Superintendent of Financial Institutions Canada, Supervisory Annual Return (PC3), Approved by the Canadian Council of Insurance Regulators, 2023, pp. 10.60 and 60.45.

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Office of the Superintendent of Financial Institutions Canada, Supervisory Quarterly Return (PC2), Approved by the Canadian Council of Insurance Regulators, 2023, pp. 40.74, 60.25, 60.80, 70.50, 70.60, and 80.15.

NOTE: Please use the 2023 Return that has been archived on the CAS website for educational purposes.

Candidates may wish to review illustrations of sample Annual Return schedules (please use the link provided on the CAS Web Site). These illustrations are for information only and will not be directly tested

# GUIDE TO COMPENSATION PLAN FOR PROPERTY AND CASUALTY INSURERS

May 2010

The compensation plan for property and casualty insurers (the "Plan") funded by property and casualty insurance companies resulted from extensive negotiations that took place with the provincial and federal Superintendents of Insurance over a period of five years and is designed to come into operation on the insolvency of a property and casualty insurer. The details of the Plan having been agreed upon by the Superintendents, the corporation which administers the compensation arrangements was incorporated as a federal non-profit corporation in 1988. Its name is the Property and Casualty Insurance Compensation Corporation/Societe d'indemnisation en matière d'assurances IARD ("PACICC"). Prior to PACICC entering into agreements with each of the provinces and territories, it was necessary to have each provincial and territorial Superintendent agree with PACICC on "prudential criteria" i.e. solvency standards to be imposed on all P&C insurers in his or her jurisdiction. The Plan has been in effect country-wide since 1989.

The following sections describe the main features of the Plan.

## 1. The Plan

The Plan is designed to provide a reasonable level of recovery for claims of policyholders under most policies issued by property and casualty insurance companies. The life insurance industry has a similar plan for life insurers which are therefore excluded from the Plan. Also excluded, because of their distinctive characteristics are aircraft, credit, crop, directors' and officers', employer's liability, certain errors and omissions (medical malpractice is not excluded), fidelity, financial guarantee, marine, mortgage, surety and title insurance. Automobile insurance in Manitoba and Saskatchewan is excluded, as are claims for bodily injury arising from automobile accidents occurring in Quebec for which compensation is available from the Société d'assurance automobile du Quebec. However, government-owned insurers otherwise participate in the Plan. Accident and Sickness Insurance is protected by the Plan, if the insurer writes it and also writes one or more classes of general insurance; if the insurer writes A and S insurance only, or A and S and Life insurance, the life insurance industry plan applies. Notwithstanding these exclusions, the Plan covers most claims under most P&C insurance policies.

The Plan, to begin with, assumed no liability for unearned premiums whatsoever but for insolvencies occurring after 1996, it now responds to claims for unearned premiums. This is limited, however, to 70% of a maximum unearned premium of $1,000 so that,effectively, the most PACICC will pay in respect of a claim for unearned premiums is $700. To take an example, if your policy period is January 1 to December 31 and a winding-up order is made in respect of your insurer on May 31, that means, in effect, that the premium for the period January 1 to May 31 has been earned (your insurance has been on risk for that period) and the premium for the period June 1 to December 31 (7 months) is unearned. If your premium was $960, your claim for unearned premium is 7/12's of $960 i.e. $560. PACICC would pay 70% x $560.00=$392.

## 2. Initiation of the Plan

The Plan is administered by PACICC, a non-profit corporation incorporated under Part II of the Canada Corporations Act. All participating insurance companies are members of PACICC. A participating insurance company is a company licensed in a participating jurisdiction to sell any of the classes of insurance for which PACICC provides protection. Those jurisdictions enacting legislation relating to the Plan have provided for exemptions for e.g. reinsurers, farm mutuals, and reciprocals. Some of the jurisdictions have enacted appropriate legislation that deems all licensed property and casualty insurers to be members of PACICC and to be bound by its By-laws and Memorandum of Operation, including commitments to make their appropriate contributions to assessments. Others have enacted legislation or regulations making it a condition of being licensed that the property and casualty insurer enter into a contract of membership with PACICC that imposes similar obligations on the insurer. All Provinces and Territories have the necessary legislation in place.

While a company is licensed in a participating jurisdiction it may not withdraw from membership in PACICC and PACICC may not terminate its membership. The company's membership is, however, deemed to be terminated six months after cancellation of its licence by a jurisdiction, if that cancellation results in its not being licensed in any participating jurisdiction to sell any of the classes of insurance protected by PACICC.

In addition, as mentioned earlier, agreement had to be reached with the Superintendents of Insurance on prudential criteria and before amending prudential criteria in future, the jurisdiction concerned is required to consult with PACICC.

**3. Operation of PACICC**

PACICC is administered by a Board of Directors elected by its members i.e. participating insurers. It operates in close liaison with the Federal Superintendent of Financial Institutions and with Superintendents of Insurance or similar insurance regulatory authorities of participating jurisdictions. The Superintendents are not official members of the Board of Directors of PACICC but they may designate representatives to participate in Board discussions on a non-voting basis. Also, the Board has the right to appoint an advisory committee as to any specific insolvency and to delegate responsibilities to that committee; again, the Superintendents are entitled to designate non-voting representatives to any advisory committee.

The obligations of PACICC come into operation only upon a formal winding-up order under the federal Winding-Up and Restructuring Act. Until that occurs, PACICC has no financial responsibility in connection with an insurer.

**4. Procedure in an Insolvency**

Immediately after the winding-up order is made, representatives of PACICC consult with the court appointed liquidator to arrive at an appropriate working relationship. Indeed, preliminary consultations are held on an informal basis prior to the appointment although, as mentioned earlier, PACICC is not called upon to make any payments until after the winding-up order has been made.

PACICC has discussions with the relevant Superintendent of Insurance as to pre-selecting the liquidator or the agent of a liquidator, when an insolvency is imminent. The major accounting firms tend to be invited to take part in a tender process, although the firm that has been the auditor of the insolvent insurer is excluded from consideration. We have also developed a model wind-up order (in conjunction with the liquidators) and we find the liquidators invariably use it.

PACICC's Memorandum of Operation is sufficiently flexible to allow for a variety of factual situations that may arise and to permit appropriate working arrangements to be made.

Under current arrangements, the procedures established by the liquidator to settle the quantum of policyholder claims against the insolvent insurer are reviewed with PACICC in order that PACICC is prepared to accept and act upon the settlements reached by the liquidator's adjusters. Where consensus is reached as to the procedures, it is possible for PACICC simply to make payment to a policyholder after the quantum of his claim is settled with the liquidator. PACICC is not, however, obligated to do this - it may review the settlement to verify that the amount is appropriate.

PACICC has discretion to make payments to third parties and in such cases the model wind-up order deems the policyholder has transferred her/his rights against the insurer to PACICC. PACICC does not stand in the shoes of the liquidator but it is generally the

case that the co-operation between them is such that PACICC requires minimal staff resources.

**5. Payment of Claims**

The maximum recovery from PACICC is currently $250,000 for all covered policies (with the exception of personal property policies, where the maximum recovery is $300,000) in respect of all claims arising from policies issued to a single named insured by the insolvent insurer and which arise from a single occurrence. The actual amount to which a particular insured (or third party claiming through the insured) is entitled is determined by first calculating what the aggregate of his entitlement is under all applicable provisions of his or her policy or policies (such as deductibles, co-insurance, etc.) and secondly, determining the lesser of that amount and the PACICC limit.

For example, an automobile insurance policyholder with a policy deductible of $250 and a claim of $300,000 can look to PACICC for $250,000; a policyholder with a claim of $175,000 and with a policy deductible of $500 can look to PACICC for $174,500. The purpose of the Plan, therefore, is to provide policyholders with basic compensation. It is not designed to provide full protection in all cases.

Because all claims by a policyholder arising out of a single occurrence are aggregated, it is sometimes necessary for PACICC to establish priorities as to how a particular payment is to be applied. You may, for example, as a result of your negligence in driving your vehicle, be sued by, say, 3 passengers in your vehicle, and by 2 occupants of the other vehicle.

**6. Other Arrangements as to Plan Payments**

So that the Plan can operate effectively, other limitations are necessary as to the claims that PACICC will pay. Claims asserted by persons who have a special relationship with the insolvent insurer may be excluded by the Board of PACICC. Further, in extreme cases, a major insolvency might trigger the limit (see paragraph 8 following) on the extent to which a participating insurer can be called upon in any year to pay assessments to PACICC; in such case it may be necessary for the Board of PACICC to make decisions that will stretch out the time over which claims will be met by PACICC.

Subject to these limitations, the Plan applies to any claims that arise under insurance policies described in paragraph 1 either prior to the winding-up order or within such time thereafter as the PACICC Board may determine. The extended time period is intended to give ample time to brokers and others to notify policyholders of the need to put in place other insurance arrangements.

**7. Recovery by PACICC of Amounts Paid**

A key principle of the Plan is that any amounts paid by PACICC are recovered by PACICC before any additional payment is received by the policyholder as to that claim. To the extent that resources to pay a particular claim are available from the insolvent insurer (or through third party claims) payments by PACICC towards that claim would therefore be of an interim nature.

Before a payment is made to or on behalf of a policyholder, the policyholder is required to certify that he or she has exhausted any available claim against any solvent insurer with whom he has a policy that covers the same loss. Further, he or she is required to assign to PACICC all of his or her rights against the insolvent insurer that arise under the particular policy. This is normally dealt with in the wind-up order. The consequence of this assignment for an insured with a claim of $300,000, as to which PACICC pays $250,000, would be that the insured would receive no participation in a distribution of $150,000 made by the liquidator of the insolvent insurer; if the distribution was $275,000, the insured would receive $25,000.

PACICC is also entitled to first priority against amounts received by the insured from third parties with respect to the loss for which PACICC provided payment.

**8. Assessment Process**

PACICC recovers the amount that it advanced to and on behalf of the policyholders of an insolvent insurer through assessments levied against particular participating insurers licenced in the participating jurisdictions in which the insolvent insurer was writing business. Separate assessments are made in respect of each participating jurisdiction in which the insolvent insurer wrote business. These assessments are limited to the shortfall between amounts advanced by PACICC and amounts recovered by it from the insolvent insurer and third parties.

To ensure that PACICC is in a position to respond to the financial demands that may be made on it, provisions were added to its Memorandum of Operation in 1996 to provide for some pre-insolvency funding. In each of the years 1998, 1999 and 2000 a special levy was made on companies to establish a Compensation Fund of approximately $30 million. Investment income is being accumulated to the Fund. The value of the Fund was approximately $43 million as of June 2009. (The Fund value is publicly disclosed at each calendar year-end in PACICC's Annual Report).

A particular participating insurer is assessed as to each participating jurisdiction in which it is licenced and in which the insolvent insurer was also licenced in accordance with the following formula:

$$A = B \times \frac{C}{D}$$

Where:

"A" is the assessment to be borne by the particular participating insurer in respect of the relevant participating jurisdiction;

"B" is the total amount being assessed against all participating insurers in respect of the relevant participating jurisdiction;

"C" is the total direct written premiums for protected policies of the particular participating insurer in respect of the relevant participating jurisdiction; and

"D" is the total direct written premiums for protected policies of all participating insurers in respect of the relevant participating jurisdiction.

For the purpose of determining the premium income of insurers, PACICC relies on the reports which insurers are required to file with the relevant Superintendents of Insurance. The maximum annual levy that an insurer may be asked to pay in a particular jurisdiction is 1.5% of its direct written premium in that jurisdiction. The Board of Directors of PACICC, in practice, makes a general assessment in respect of each participating jurisdiction early in the course of a particular insolvency, reflecting the maximum exposure that it anticipates under the particular insolvency, subsequently levying draws on that assessment as the need for funds has arisen. The Board may also choose to have PACICC borrow money from its Compensation Fund and delay implementing an assessment until it is better able to estimate PACICC's exposure. The money borrowed from the Fund must be fully repaid with interest, with the relevant insurers being assessed for the appropriate amount.

The Board of Directors is also entitled to levy administrative assessments for the administration expenses of PACICC. In 2009, the fee varied from $1,850 for the smallest companies to $9,200 for the largest companies.

If the making of Compensation Payments is likely to cause financial difficulty to the property and casualty industry or to PACICC, the Corporation is required to have discussions with the regulators with a view to modifying the compensation arrangements and possibly to defer making payments, if this is appropriate, while the discussions are continuing.

**9. Conclusion**

The Plan protects policyholders who are in need of protection against the more serious results of the insolvency of a property and casualty insurer without exposing the general insurance industry to an unlimited liability for all claims against an insolvent insurer. Prior recovery of amounts advanced by PACICC from any other recoveries of the insured against the same claim is consistent with this approach.

It has been proved that the plan arrangements can operate effectively and efficiently in the context of the established degree of co-operation among Superintendents of Insurance, liquidators and the insurance industry in insolvencies.

Alex Kennedy
December 2003 (and updated as of June 2009)

(Alex Kennedy was Vice-President, Secretary-Treasurer and Counsel to PACICC from its inception in 1988 to 1998. Alex served as PACICC’s President and Chief Executive Officer from 1998 to 2003)