RATEMAKING FOR FIRE INSURANCE

BY

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The fire insurance business is reasonably well implemented to perform the task of ratemaking and has in fact made rates according to a normally good formula. While there is not a complete and formal set of adopted standards, substantial progress has been made in that direction. The materials and plans in current use will be discussed here.

The Standard Profit Formula, originally adopted in 1921 and revised in 1949, forms the cornerstone for the measurement of the adequacy of fire insurance rate levels. The Standard Classification of Occupancy Hazards, as originally adopted in 1914 and last basically amended in 1946 as to classes and 1949 as to policy term and outstanding losses, is a competent plan for recording classified premium and loss experience by states. The Statistical Plan for Expenses which was put into effect in 1951 provides for the reporting of expenses by classification of expense and where possible by state.

Early in 1955 Inter-Regional Insurance Conference developed a statement of principles designed to assist rate committees and the staffs of rating organizations on revisions. The statement follows:

1. The principle of a 6% underwriting profit factor (5% profit plus 1% catastrophe) as set forth in the 1921 Profit Formula of the National Board of Fire Underwriters as modified in the 1949 Sub-Committe Report of the NAIC shall be maintained. No over-all rate level adjustment shall be made if the indicated profit is within a tolerance zone of two percentage points above or below such 6% factor.

2. Review of over-all rate level shall be annual; however, it is not the intent to require annual adjustment of rate levels.

3. Underwriting profit as refered to above shall be determined with use of direct earned premiums and incurred loss and incurred expense figures without regard to reinsurance.

4. As to loss experience, all available and relevant premium and loss statistics, including loss adjustment expenses, shall be used, to include both member and subscriber (including deviating) Company figures adjusted to reflect current rate levels. Due consideration shall also be given to other available and relevant statistics in the interest of securing the widest possible base of loss experience. In the case of fire rate levels, the loss experience of not less than the most recent five-year period shall be used, while in the case of windstorm or extended coverages including the windstorm peril, the loss experience of not less than the most recent ten-year period shall be used.

5. As to expenses other than loss adjustment expenses, only the experience of member and subscriber stock Companies during the most recent period of years shall be used, reflecting comparable methods of operation and acquisition costs. Such expense figures shall not be separated as between commissions and premium taxes and all other expenses.
6. Due consideration shall be given to loss experience, expenses and to credibility and all other relevant factors within and outside the State, including the important element of informed judgment in reflection of economic trends, social conditions, new processes and inventions and other factors which may affect prospective loss experience and expenses.

A plan for reporting catastrophe losses, those aggregating $1,000,000. or more in a single event, was inaugurated in 1949. The use to which this information will be put is still under study.

THE STANDARD PROFIT FORMULA

Simply stated the original Standard Profit Formula read as follows:

Earned Premiums (Net)			———
Incurred Losses (Net)		———	
Expenses Incurred:			
Specific	———		
General	———		
Departmental	———		
Total Expenses		———	
Allowance for Conflagration Hazard		———	———
Underwriting profit or loss			———

The factor for underwriting profit to be achieved was and still is 5%. The allowance for conflagration hazard originally was 3% but was reduced to 1% in 1949. The minimum period of time for dependable experience was indicated as five years.

To arrive at the earned premiums for each year, it was recommended that to net premiums written less all reinsurance there be added the unearned premium reserve at the end of the preceding year and that there be subtracted the unearned premium reserve at the end of the year under study. Where a study is undertaken for a single state and the reporting company does not have premium reserves by state, it was recommended that the reserve be estimated by taking that proportion of the total reserve that the net written premiums in the state bear to the net written premiums countrywide by the company for the year in question.

Losses incurred were to include all losses less amounts recovered or recoverable on reinsurance.

Specific expenses were identified as commissions and other agency expense, taxes, licenses, fees, bureau assessments and loss adjustment fees. This expense group would include all expenses assignable to a particular state.

General expenses such as salaries, rent and overhead of home office, postage, telephone and stationery would be apportioned to each state in proportion to its premium volume.

Departmental expenses contemplated those involving a branch office which handles business in more than one state. These were to be apportioned in the same manner as general expenses but over only the states covered by the branch.

A significant point in the formula treatment of general expenses is the inclusion therein of "federal government taxes". The profit objective is, therefore, 5% net profit after income tax. Additionally no attempt is made to recognize prepaid expenses such as commissions and premium taxes as available for the adjustment of indicated expense costs.

All expenses are to be treated on an incurred basis and the program specifically provides for adding to paid expenses increases in expense reserves and deducting decreases.

Dealing with the subject of expenses, the Special Sub-Committee on Underwriting Profit or Loss of the Fire and Marine Committee of the National Association of Insurance Commissioners made the following comment in its report at a June 9, 1949 meeting:

> "A rising or falling volume of written premiums will affect the ratio of incurred expenses to earned premiums even though the actual proportion of the premium dollar absorbed by expenses remains constant. Permissible loss ratios or flat expense allowances should not be altered solely because of a change in the incurred expense earned premium ratio caused by a rising or falling written premium volume unless there is other evidence of a real percentage increase or decrease in the expense of doing business."

The allowance for conflagration hazards as a percentage of earned premium although deductible before arriving at underwriting profit or loss is not required to be set aside as a specific reserve. No conclusion has yet been reached concerning the treatment of conflagrations from the loss standpoint in the application of the Standard Underwriting Profit Formula.

Among the suggested methods of spreading a conflagration loss have been that a fixed amount be charged to the state of origin, viz., $1,000,000., and the balance spread over all states including the state of origin on a premium proportion basis; or alternatively that the state of origin be charged not more of the loss than a fixed percentage of its annual premiums and the balance spread as in the first case.

The underwriting profit or loss which the original formula produced did not agree with the reports of the companies as submitted

since the allowance for conflagration hazard would not appear in the individual reports. The subsequent action in 1949 of combining the allowance for conflagration hazard with the provision for underwriting profit changed that condition. At the time of the change in 1949, the allowance for conflagration hazard was reduced from 3% to 1% and merged with the underwriting profit allowance of 5% to produce a combined rate of 6%.

There has been and still is no item in the formula for investment income on policy reserves. The insurance industry vigorously maintains that there should be no such factor. It might very well add that if there were to be an investment factor included in the formula income, the profit factor in the formula should be substantially increased as an offset.

The National Board of Fire Underwriters refers to the Standard Profit Formula as "a practical working yardstick", in a report prepared by its Committee on Laws dated June 3, 1948. It is, of course, a means of measuring what the underwriting profit or loss has been and a possible means of determining whether the level should be raised or lowered if there have been no interim changes of consequence.

As a measurement of results, the formula reports should be examined not merely for the aggregate of a period such as five years, but for the separate years to detect a trend when one exists. An extreme example might be one where the underwriting profit declined from 20% in the earliest year to none in the latest year and yet averaged at 10%, and if taken as a yardstick, call for a reduction in rates that have already become profitless.

THE STANDARD CLASSIFICATION OF OCCUPANCY HAZARDS

The original classification list of occupancy hazards was adopted in 1914 by the National Board of Fire Underwriters and approved by the National Association of Insurance Commissioners. The list underwent periodic revisions as theories changed between the desire for greater analysis between classes and the realization that a credible class needed a substantial volume of like units.

The fundamental revision approved in 1946 was an orderly presentation of a statistical plan for the analysis of fire insurance premium and loss experience. This revision was approved by the National Association of Insurance Commissioners at its meeting of June 1946.

The new plan called for 5 occupancy groups containing a total of 115 classes.

Residential Risks	11 classes
Mercantile Risks	9 classes
Non-Manufacturing Risks	24 classes
Manufacturing Risks	65 classes
Sprinklered Risks	6 classes
Total	115 classes

These classes were further subdivided according to Fire Department protection as "Protected" or "Unprotected" and as to class of construction between "Fire Resistive", "Brick" and "Frame". Each state is separately reported with two states, Illinois and New York, having a separate reporting of Cook County and New York City respectively.

The National Board of Fire Underwriters provides member and subscriber companies with recommended codes to be followed in compiling the classified reports and offers an alphabetical index of codes for various occupancies.

Premiums and losses are reported on the basis of direct premium writings and losses incurred which is different than the basis of the Standard Profit Formula which is on the net premiums earned and losses incurred after deducting reinsurance.

Commencing January 1, 1949, companies were required to report premiums by policy term so that earned premiums could be computed by classification. Previous reports on a written and paid basis are still available as well as the earned and incurred classified reports.

USES OF CLASSIFIED EXPERIENCE

In a statement of principles adopted by the National Board of Fire Underwriters are the following comments:

"Classified underwriting experience serves a three-fold purpose in that it assists:

(a) underwriters in the determination of the lines to be carried by their companies;

(b) rating experts in reviewing past experience; and

(c) the public through making available statistics that can be readily understood."

The report of the National Association of Insurance Commissioners of June 1946 is quoted below:

> "No exact standard for credibility of fire insurance experience has ever been established. Any exact yardsticks established at this time, either as to the number of risks or the premium volume that would provide credibility, would be arbitrary, and only after this classification system has been in operation for some time will it be possible to give consideration to the development of such standards.
>
> "While in many states the classified fire experience over a five-year period will possess credibility, particularly in the residential and mercantile classes, there may be conditions when the use of a longer period may be considered desirable. It should be emphasized that in perhaps an equal or larger number of states and classes single state credibility will not exist. With this thought in mind the classification plan here proposed will make available consolidated experience over broader territories by groups

of states and nationally and also by groupings of similar classes of risks."

THE STATISTICAL PLAN FOR EXPENSES

The next step in the development of ratemaking statistics was the adoption by the National Board of Fire Underwriters of the plan in caption effective as of January 1, 1951. The most important function of the new plan was the separation of expenses between those "specifically assignable by state" and those "not specifically assignable by state".

Prior to this program the only useful statistics on expenses came from the "Insurance Expense Exhibit" which showed expenses by kind of business and kind of expense, but did not reflect differences by state.

The expenses which are specifically assignable by state are:

1. Commissions and brokerage (excluding contingent).
2. Loss adjustment expenses directly identified with individual losses.
3. Taxes, licenses and fees at state and local level.
4. Board and bureau expenses at the state level.
5. Unusual expenses assignable by state.

After the foregoing expenses are allocated to the states to which they are chargeable, the balance of expense not specifically assignable is related to direct premiums written and then assigned on that basis to the individual states.

Federal Income Taxes are not included in the Statistical Plan for Expenses even though the Standard Profit Formula specifically includes such expense in arriving at underwriting profit.

The following comment on taxes appears in the declaration of the National Board in a brochure dated 1920 entitled, "What Constitutes a Reasonable Underwriting Profit and The Method of Determining Same".

> "Federal income and excess profits taxes are among the heaviest burdens as to expense under which the companies labor.— It is clear that no determination of profit can be made which ignores these very heavy items of expense. It is idle, as well as unjust, to compute a paper profit from which further deductions must be made before an actual profit is available as a result of doing business, to the parties whose capital is hazarded in the enterprise. All deductions of losses and expenses should be made before the production of any figure regarded as profit.
>
> "No corporation organized for profit and depending for its existence upon a reasonable return to its stockholders from its operations could continue if due credit were not given for all costs of operation which go to reduce the amount of its net income, upon which its return to stockholders is predicated."

INTER-REGIONAL INSURANCE CONFERENCE

The Statement of Principles adopted by this conference contains some specific and some general recommendations. It reiterates the profit provision of the Standard Profit Formula, but adds a suggestion of a tolerance zone in each direction of two percentage points. If the 6% factor for profit does not, in the recorded experience, drop below 4% or rise above 8%, no rate level adjustment is to be made.

The statement identifies the underwriting profit as determined with the use of direct earned premiums and incurred losses. This differs from the Standard Profit Formula which is based upon net premiums and losses after reinsurance.

The loss experience is to include all available and relevant premium and loss statistics, including loss adjustment expenses with premiums adjusted to reflect current rate levels. The plan thus recognizes that the experience must be examined on the basis of current rate level and not the mixed rate levels of an experience period.

The expenses, excluding loss adjustment expenses, are to include only the experience of member and subscriber stock companies during the most recent period of years and reflecting comparable methods of operation and acquisition costs. Since the period of time is not specified, it would seem to be left to the discretion of the rate making committee, but presumably would not exceed five years and might be as little as two years.

The statement goes on to say that "Such expense figures shall not be separated as between commissions and premium taxes and all other expenses." The apparent significance of this injunction is that the authors did not want any distinction made between fixed and variable expenses. The reports made to the National Board show the separation.

Broad discretion is given in the part of the statement which provides that "Due consideration shall be given to loss experience, expenses and to credibility and all other relevant factors within and outside the state, including the important element of informed judgment, etc."

The statement is silent on the subject of Federal Income Tax as an expense.

NEW YORK 1958 REVISION

Acting to a large extent within the framework of the industry program, a committee of the rating organization studied the experience indications and endeavored to apply an "element of informed judgment".

An adverse experience trend was apparent, so it seemed desirable to use the latest possible experience and use a weighting factor emphasizing the more recent years. The 1957 classified experience would not be available until the fall of 1958 so it was decided to include the calendar year experience of New York as reflected in the annual statements for 1957.

For rate level purposes, the Industry Committee added the 1957 statement figures to the five previous years classified experience adjusted to current rate level. This was then weighted on the following basis:

1952	10%
1953	10%
1954	10%
1955	15%
1956	25%
1957	30%

The regulatory authorities agreed to the inclusion of the 1957 aggregate results, but suggested the use of a total of five years weighted as follows:

1953	15%
1954	15%
1955	15%
1956	25%
1957	30%

This change was accepted for purposes of harmony.

EXPENSE LOADING—1958 REVISION

For a period of years an expense loading in New York rates on the basis of the standard profit was 46.5% as follows:

Expense Loading	46.5%
Profit Loading	6.0
Normal Loss Ratio	47.5
Total	100.

After examining the experience of the more recent years, it appeared that a reasonable expense factor would be 47.1%. The 1958 revision was, therefore, based upon this loading:

Expense Loading	47.1%
Profit Loading	6.0
Normal Loss Ratio	46.9
Total	100.

The increase allowed for expenses in the 1958 revision recognizes the higher costs incurred on fire insurance business. The original industry proposal was for an allowance of 48% based upon a rounding out of the countrywide average stock company expenses of the latest three years' results available at the time when the filing was

initiated. These were 47.4% (1954), 47.9% (1955), 49.0% (1956), made up as follows:

	1956	*1955*	*1954*
Loss Adjustment	3.4	3.0	3.0
Commission	25.8	25.7	25.1
Other Acquisition	7.1	6.9	6.9
General	9.2	8.9	9.0
Taxes and Fees	3.5	3.4	3.4
Total	49.0	47.9	47.4

The rising trend of expenses continued and the reports for 1957 showed the following:

Loss Adjustment	3.7
Commission	25.7
Other Acquisition	7.1
General	9.5
Taxes and Fees	3.7
Total	49.7

Subsequent to the original proposal of the rating organization, an expense analysis by the National Board of Fire Underwriters showing the results of the reports under The Statistical Plan for Expenses indicated that for New York State based upon an analysis of 1956 results a total of 47.1% would be proper, and this was adopted. The difference is accounted for by the separation into expense specifically chargeable to New York and those allocated from expenses not specifically allocable. These are not broken down by expense class in the reports released to the rating organization or otherwise. It is the policy of the National Board to supply such results only as a total expense provision.

LOSS ADJUSTMENT EXPENSE

The industry proposal to transfer loss adjustment expense out of the expense loading to apply with the loss factor was not approved by the State regulatory authority. It was left as a part of total expense loading as heretofore.

The plan of Inter-Regional for the treatment of this subject is not entirely clear. Loss adjustment expense is made up of general loss expense as well as specific costs and while the latter could be programmed for allocation to classified experience, the former could not. It must, therefore, be assumed that it would be added to classified loss ratios as a ratio of earned premiums or a ratio of incurred losses.

Assuming an over-all loss ratio of 50% of earned premiums and a loss adjustment expense ratio of 3% of earned premiums, the latter becomes 6% of losses. The results vary with the manner of loading, viz:

Loss Ratio of Class	*Loss Expense Loaded as Ratio of Premium*	*Loss Expense Loaded as Ratio of Loss*
20	3.	1.2
30	3.	1.8
45	3.	2.7
60	3.	3.6

The use of loss adjustment expense as a percentage of loss would seem to be a more logical treatment and less of a change from the present method of including it in the general loading.

CREDIBILITY

The credibility formula that had been used in the past in New York was continued as a basis for developing the indicated rate changes. This set of values which is based upon the judgment of the authors is as follows:

5-Year Premiums	*Credibility*
Under $50,000.	5%
$ 50,000. to $ 200,000.	10%
200,000. to 450,000.	20%
450,000. to 800,000.	30%
800,000. to 1,250,000.	40%
1,250,000. to 1,800,000.	50%
1,800,000. to 2,500,000.	60%
2,500,000. to 3,200,000.	70%
3,200,000. to 4,000,000.	80%
4,000,000. to 5,000,000.	90%
5,000,000. and over	100%

The formula further provided that the five-year loss ratio would not be affected more than 10 percentage points by the experience of any one year. Most rate changes would be limited to a maximum of 25%.

A typical rate development for a class would be as follows:

Class 09 Premiums (as adjusted to rate level)

$1,500,000. Loss ratio 60% ÷ Normal loss ratio 46.9% = 1.28 indicating a gross increase of 28%, but as credibility for that premium volume is 50%, the selected increase would be 14%.

THE CREDIBILITY PROBLEM

At the advisory organization level the following plan was suggested for a formula treatment of credibility differing from the New York Standard.

"CREDIBILITY—

(a) Many of the specifically coded classes in the Classified Underwriting Experience exhibit will not qualify under any text for credibility. In some instances such classes may be combined with similar or affiliated classes and the combined experience measured against the minimum requirements for credibility.

(b) Where an integration of these classes with others is not practicable, the necessity for and the extent of any rate adjustment of a specific class can only be determined by considered appraisement of the available experience, and analysis of the rate level in relation to that of classes having comparable hazards and the rate structure as a whole.

(c) In some cases specifically coded classes may have a sufficiently broad experience base to justify independent treatment, but may be so allied and interwoven with other occupancies in the rate structure to warrant their consolidation.

(d) For purposes of adjustment under present rating methods, it has been found impractical to make separate percentage adjustments for brick and frame construction and for protected and unprotected risks within a single occupancy class; or for fire-resistive construction within the class when the five year premium fails to meet the minimum requirements of credibility. Adjustments under the proposed Class Adjustment Formulae shall, accordingly, be made on a group basis of all construction, protected and unprotected, unless otherwise specifically provided.

(e) MINIMUM REQUIREMENTS FOR CREDIBILITY: A single or grouped occupancy classification shall be subject to the application of the Class Adjustment Formula only when the Premiums on the class within the state is of sufficient volume and the loss experience within the state has been relatively stable over the five year period under review.

(f) For a given State, it is considered that a five year written paid premium of $2,000,000 for all construction is a reasonable minimum premium requirement.

(g) As a reasonable measure of the relative stability of the loss experience of a class over the five year period, it is proposed to use the ratio that the lowest annual loss ratio of the class bears to its highest annual loss ratio. If the Credibility Grading thus established is 50% or more and the Minimum Premium Requirement has been met, a class or class group shall be considered as CREDIBLE and eligible for application of the Class Adjustment Formula. If the five year Premium of a class or class group is less than the Minimum Premium Requirement *OR* if its Credibility Grading is less than 50%, it shall be con-

sidered as NOT CREDIBLE and no independent rate adjustment of the class or class group shall be made by the Class Adjustment Formula.

(h) DEGREE OF CREDIBILITY: The number of classes meeting the Minimum Requirements will embrace a wide range of premium volume and considerable variation in their degree of credibility. To establish an inflexible single standard of credibility would preclude classes that may properly qualify although lacking in the stability exhibited by the largest classes.

For this reason the following Credibility Adjustment Table embracing modified applications of the Underwriting Profit Formula and scaled limited adjustments reflecting degree of credibility, is proposed.

The modification of the Underwriting Profit Formula is accomplished by establishing an expanded zone of tolerance above the standard of two percentage points, thus increasing the degree of tolerance in the ratio of descending credibility within prescribed limits.

CREDIBILITY ADJUSTMENT TABLE

		*Tolerance Range		
Credibility Grading	*Points of Tolerance*	*REDUCTION If Ratio Less Than*	*INCREASE If Ratio More Than*	*Limits of Rate Adjustment*
81 - 100%	2	47	51	25%
71 - 80%	2	47	51	20%
61 - 70%	6	43	55	15%
55 - 60%	8	41	57	10%
50 - 54%	10	39	59	5%

Class is not credible and table is not applicable when Credibility Grading is less than 50%.

* Note: Figures under Tolerance Range to be based upon Projected Loss Ratio as determined by the Aggregate Adjustment Formula. For purpose of illustration a Projected Loss Ratio of 49 has been assumed in the above table.

Comparing the two plans it will be found that the proposed plan contemplates the very sensible combination of like classes for purposes of improved credibility, while the New York plan is silent on that score. It also introduces the element of stability in a different but not necessarily superior method to the New York plan, since the latter plan uses a limit in the effect of any one year on the rate level.

The table of credibilities although more liberal in the illustration of allowing full credibility to a premium volume of $2,000,000 if the experience from year to year is stable, as compared with a $5,000,000

premium volume in the New York plan, it lacks formal treatment for premium volumes of less than the minimum for full credibility. The New York plan allows credibilities as low as 5% on volumes of less than $50,000. On the other hand, the proposed plan would limit rate adjustments to as little as 5% where annual loss ratios fluctuate as much as from 30% to 60%, or 50% to 100%. It would seem more realistic to key the adjustment to a percentage of the indicated change than to an absolute maximum, other than the general maximum of say 25%. It would also seem desirable to adopt a rule of thumb for the treatment of classes having less than the prescribed minimum of $2,000,000 particularly where they are not subject to relatively high catastrophe potential.

The expanded zone of tolerance for the classes having a credibility grading of 50% to 70% further diminishes the opportunity for rate adjustments even to the limited degree the proposed plan allows. Thus a class of business with a 5 year loss ratio of 59% with a credibility grading 54% would not have a rate adjustment. Even a class with a $1,000,000 annual volume and bad results in 4 out of 5 of the experience years would go unadjusted under the proposed formula for credibility viz:

1st year	66% loss ratio
2nd year	33% loss ratio
3rd year	65% loss ratio
4th year	66% loss ratio
5th year	65% loss ratio
5-year average	59% loss ratio

RATE LEVEL CHANGES

Inasmuch as the rate level factor for the whole 1958 revision resulted from a weighting and included a later and unclassified year, the classified indications were slightly modified on a judgment basis to achieve the over-all result of a 4.2% rate level increase. In the 1957 revision, rates were increased 3%.

The 1957 incurred loss ratio on fire business of stock companies was 54.9%, for New York State and the countrywide expense ratio was 49.7% or a total of 104.6%. From this it would seem that the rates earned in 1957 were 10.6% short of producing the 6% profit goal of the Standard Profit Formula. Fire insurance ratemaking being linked to a five-year standard makes for difficulty in achieving a timely correction.

TERM FACTORS

The adjustment of the term factor from 75% to 85% for each year after the first was an objective of the industry which could not be accomplished because of the impossibility of reconciling the views of

the regulatory authorities of the State with those of industry representatives. Industry wished to recognize the increase at a value of 3.12% on the basis that this was all that would be realized during the first two years. The regulatory authorities insisted on valuing the change at the full ultimate value of 6.65% which would have resulted in a reduction in the class rates as a companion to the modified term factor. The proposal was, therefore, dropped for the present.

EVALUATION OF TERM FACTORS

The difference in values advocated by the Rating Organization and the State Insurance Department attributable to the proposed modification of term factors from 75% to 85% arises from the approach to the subject rather than a disagreement on the values per se. The industry agrees that the full ultimate value after 5 years will be 6.65%, but contends that current rates should not be reduced 6.65% in recognition of a change which will not be fully effective until 5 years has elapsed.

A study made by Inter-Regional of term business in force indicates that during the first two years that the new term rule is in force the rate level would benefit to the extent of 3.12% out of the proposed new term rule and offered to recognize that value with the balance of the benefit deferred for consideration until that time has elapsed. The Insurance Department was apparently influenced by the fact that in the 1957 revision when classes previously denied the term factor discounts were granted them, the Rating Organization took credit for the full effect of the reduction aspect of the change. The situation here was different, however, since the change applied to annual business which could take advantage of the change within the first year the revision was in effect.

Early in 1958 Inter-Regional Insurance Conference revised the basic principles described earlier and issued a recommended procedure for rating bureau review of the over all fire rate level by state. Basic principle 4 has been broken up into two parts 4 and 5 and modified; principles 5 and 6 become 6 and 7 and are changed a little.

A discussion of the program and some practical use to which it was put follows:

1958
INTER-REGIONAL INSURANCE CONFERENCE
BASIC PRINCIPLES—RATE LEVEL ADJUSTMENTS

To a very considerable extent and insofar as it was practicable to do so, the 1958 New York fire rate revision followed the adopted recom-

mendations of Inter-Regional Insurance Conference. These recommendations and a commentary on them follow:

1. The principle of a 6% underwriting profit factor as set forth in the 1921 Profit Formula of the National Board of Fire Underwriters as modified in the 1949 Subcommittee Report of the NAIC shall be maintained. No over-all rate level adjustment shall be made if the indicated profit is within a tolerance zone of two percentage points above or below such 6% factor.
2. Review of over-all rate level shall be annual; however, it is not the intent to require annual adjustment of rate levels.
3. Underwriting profit as referred to above shall be determined with use of direct earned premiums and incurred loss and incurred expense figures without regard to reinsurance.
4. All available and relevant premium and loss statistics, including loss adjustment expenses, of member and subscribing stock companies, adjusted to reflect current tariff rate levels, shall be used. Loss adjustment expenses shall be included with loss statistics. The premium and loss statistics of other companies may be included in the determination of actual and adjusted loss ratios to the extent that the use of such loss experience is necessary and pertinent.
5. In the case of fire rate levels the loss experience of not less than the most recent 5-year period shall be used, while in the case of windstorm or extended coverages which involve the windstorm peril the loss experience of not less than the most recent 10-year period shall be used.
6. As to expenses other than loss adjustment expenses, only the experience of member and subscribing stock companies reflecting comparable methods of operation and acquisition costs during the most recent available year shall be used. Such expense figures shall be treated as a unit and shall not be separated into their several components.
7. Due consideration shall be given to loss experience, expenses and all other relevant factors within and outside the State, including the important element of informed judgment and the reflection of all developments and trends which may affect prospective loss experience and expenses.

In the formula calculation of the rates, the provision of 6% for underwriting profit (and catastrophe loading) was allowed. It should be noted that the basic principles fail to show the intention to include in this provision the catastrophe provision which was part of the 1949 amendment of the Profit Formula.

With regard to item 3, the results were examined on the basis of direct business. The classified premium and loss experience was so reported, and the expenses were adjusted to exclude the effect of re-

insurance on commissions and loss adjustment expenses in the reports compiled by the National Board of Fire Underwriters. The experience of all member and subscriber companies on premiums and losses were included and adjusted to present rate levels, but the experience of only stock companies was included for expense loading. If direct writer stock companies become a factor on this class of business the expense loading practice may need to be modified in this respect to recognize their different expense needs.

As to item 5, the most recent 5-year experience was considered but the latest year used for rate level purposes was not yet available on a classified basis, but considered on a total basis. This seemed the only practical basis for including the most recent years results.

The recommendation under item 6 could not be fully implemented because the Insurance Department would not agree to the separate treatment of loss adjustment expenses. While the expense figure was treated as a unit it was capable of comparison with the classified expense results reported in the Insurance Expense Exhibits. The National Board of Fire Underwriters analysis for 1956 was used, as this was the latest available at the time the revision was processed.

The item 7 recommendation was followed particularly in the selection of class modifications as against the formula indications. Some indicated small reductions were not applied and some indicated large increases were moderated.

RECOMMENDED PROCEDURE FOR RATING BUREAU REVIEW OF THE OVERALL FIRE RATE LEVEL BY STATE

To implement its "Basic Principles", Inter-Regional suggests the weighting of earned fire premiums adjusted to reflect current rate levels. A six-year period is proposed with the weighting to enhance the effect of the experience of the more recent years. The same weighting would be applied to the incurred losses for the same purpose. This seems very reasonable particularly since for early use it will be necessary to use the latest unclassified year for rate level purposes along with the five latest years' classified experience.

The Inter-Regional report calls attention to the fact that earned premiums and incurred losses are now available by state on a classified basis for a full five-year period and that for the immediate past year ratios can be provided by the National Board for converting written premiums to earned and paid losses to incurred. These latter results may also be compared with the estimated earned premiums and incurred losses reported on page 14 of the annual statements filed with insurance departments.

The report states that from the Insurance Expense Exhibits of subscribers the National Board will provide the countrywide allocated fire loss adjustment expense ratio to earned premiums for the most recent year. The word "allocated" used here must be interpreted as meaning expenses allocated to fire loss adjustment expense since there is no separate reporting of unallocated loss adjustment expense.

The composite total of expense data available from the National Board to the rating bureaus is computed for the same reporting companies.

The report refers to experience of other member and subscriber companies not included in the National Board statistics being obtainable from other statistical agencies. This contemplates obtaining from the National Association of Independent Insurers and the Mutual Insurance Advisory Association the statistical data of rating bureau subscribers who report through them. The use of non-stock experience is qualified by the phrase "if necessary and pertinent".

The report recommends as a first step after the assembly of the six year experience data that the written premiums be adjusted to reflect current rate levels. The example given follows:

Effective Jan. 1, 1954 — 3.4% reduction
Effective July 1, 1954 — 3.1% reduction
Effective April 1, 1955 — 4.0% reduction

	Direct Written Premiums		*Factor*		*Adjusted Direct Written Premiums*
1952	$74,654,852	×	89.9%	=	$ 67,114,712
1953	75,792,260	×	89.9	=	68,137,242
1954	74,426,189	×	94.5	=	70,332,749
1955	75,294,532	×	99.0	=	74,541,587
1956	70,933,741	×	100.0	=	70,933,741
1957	72,107,291	×	100.0	=	72,107,291
					$423,167,322

Explanation of Factors

1955: The 4% reduction effective April 1, 1955 requires adjustment of the actual written premiums for the first 3 months of that year; i.e.

Factor = 100% — (3/12 × 4%) = 99%.

1954: (a) The 4% reduction effective April 1, 1955 requires adjustment of the 1954 premium; and (b) the 3.1% reduction effective July 1, 1954 requires adjustment of the first 6 months of 1954; i.e.

Factor = (a) 100% — 4% = 96%;
(b) 96% — (6/12 × 3.1% × 96%) = 94.5%.

1953: (a) The 4% reduction effective April 1, 1955 requires adjustment of the 1953 premiums; (b) the 3.1% reduction effective July 1, 1954 requires adjustment of the 1953 premium; and (c) the 3.4% reduction effective January 1, 1954 also requires adjustment of the 1953 premium; i.e.

Factor = (a) 100% — 4% = 96%;
(b) 96% — (3.1% × 96%) = 93%; and
(c) 93% — (3.4% × 93%) = 89.9%.

1952: Factor same as calculated for 1953.

The description of the steps for deriving the earned premium and incurred loss figures from the premiums written and losses paid figures becomes somewhat superfluous now that the National Board gets these in the Classified reports and can get the same figures for the latest unclassified year from the annual statements. The chief value remains in the use of these ratios in converting the written premiums as adjusted to current rate levels to an earned basis. The conversion of paid losses to an incurred basis is a necessary counterpart. Caution is advised that experience of the same companies is used throughout.

The application of the ratios is illustrated as follows:

Calculation of Adjusted Earned-Incurred Experience:

	Adjusted Direct Written Premiums		*Earned to Written Ratios*		*Adjusted Direct Earned Premiums*
1952	$67,114,712	×	96.3%	=	$ 64,631,468
1953	68,137,242	×	98.7	=	67,251,458
1954	70,332,749	×	100.9	=	70,965,744
1955	74,541,587	×	99.7	=	74,317,962
1956	70,933,741	×	103.7	=	73,558,289
1957	72,107,291	×	105.2	=	75,856,870
					$426,581,791

	Direct Paid Losses		*Incurred to Paid Ratios*		*Direct Incurred Losses*
1952	$30,330,463	×	102.7%	=	$ 31,149,385
1953	31,102,116	×	102.7	=	31,941,873
1954	31,382,792	×	98.9	=	31,037,581
1955	37,004,640	×	101.8	=	37,670,724
1956	37,635,173	×	106.7	=	40,156,730
1957	40,746,226	×	108.2	=	44,087,417
					$216,043,710

$\frac{\$216,043,710}{\$426,581,791} =$ 50.6% Adjusted Earned-Incurred Loss Ratio (*not* including Loss Adjustment Expenses)

If the adjustment to current rate level were applied to earned premiums, some distortion would result in that premium writings and earnings do not follow a parallel course.

The step for the derivation of "Weighted Loss Ratio" involves a judgment emphasis on more recent experience with the same factors applied to adjusted direct earned premiums and direct incurred losses to secure weighted adjusted earned premiums and weighted direct incurred losses. An illustration follows:

Derivation of "Weighted Loss Ratio" Calculated from Overall Adjusted Direct Earned Premiums and Incurred Losses:

	Adjusted Direct Earned Premiums		*Factor*		*Weighted Adjusted Direct Earned Premiums*
1952	$64,631,468	×	10%	=	$ 6,463,147
1953	67,251,458	×	10	=	6,725,146
1954	70,965,744	×	10	=	7,096,574
1955	74,317,962	×	15	=	11,147,694
1956	73,558,289	×	25	=	18,389,572
1957	75,856,870	×	30	=	22,757,061
					$72,579,194

	Direct Incurred Losses		*Factor*		*Weighted Direct Incurred Losses*
1952	$31,149,385	×	10%	=	$ 3,114,939
1953	31,941,873	×	10	=	3,194,187
1954	31,037,581	×	10	=	3,103,758
1955	37,670,724	×	15	=	5,650,609
1956	40,156,730	×	25	=	10,039,183
1957	44,087,417	×	30	=	13,226,225
					$38,328,901

$$\frac{\$38{,}328{,}901}{\$72{,}579{,}194} = 52.8\% + 3.4\%^{*} = 56.2\%$$ Weighted Adjusted Earned-Incurred Loss Ratio (*including* Loss Adjustment Expense Ratio)

**NOTE*: Allocated Loss Adjustment Expense Ratio of 3.4% derived from the countrywide Insurance Expense Exhibit compiled by the National Board for the most recent year available (in this example, 1956) related to Earned Premiums.

It should be noted that the addition of 3.4% to the loss ratio to reflect loss adjustment expenses is not accepted by New York State regulatory authorities.

The calculation of the expense loading as recommended involves taking the State ratio of expenses to direct written premiums for the latest year as furnished by the National Board and adjusting it by a factor representing the ratio of unweighted adjusted written premiums to unweighted adjusted earned premiums. This is designed to adjust the written expense ratio to an earned expense ratio. Where the loss adjustment expense is treated as part of loss ratio, it would be deducted from expense ratio for such purpose.

Many rate makers prefer to split expenses between fixed and vari-

able so that the variable expenses can be applied as a final loading on the losses and fixed expenses. Others will combine the ratios of expenses to earned premiums for all but commissions and premium taxes with the latter on a ratio of expenses to written premiums. The Inter-Regional Plan adopts neither of these methods.

The final step in the Inter-Regional Plan for rate level adjustment involves adding together the indicated expense ratio factor and the profit factor. This is subtracted from 100% to produce a "balance point" loss ratio (sometimes called the "permissible" loss ratio). The remainder of the calculation is fairly standard. It involves dividing the weighted adjusted earned-incurred loss ratio by the so-called "Balance Point" loss ratio to produce the indicated rate level adjustment as shown in the example below:

Calculation of the State Indicated Overall Fire Rate Level Adjustment:

(a) Stock Company Earned Expense Ratio

(excl. Loss Adj. Exp. Ratio) = 44.0%
Underwriting Profit Factor = 6.0%

Combined Total = 50.0%

(b) "Balance Point" Loss Ratio = 100.0% — 50.0% = 50.0%

(c) Weighted Adjusted Earned-Incurred Loss Ratio

$$\frac{\text{(incl. Loss Adj. Expense Ratio)} = 56.2\%}{\text{"Balance Point" Loss Ratio} = 50.0\%} \times 100 = 112.4\%$$

and,

The Indicated Overall Fire Rate Level Adjustment is:

112.4% — 100% = +12.4% (Increase)

To determine the dollar amount of the adjustment it is suggested that the percentage change be applied to the latest years actual written premium total from the classified experience. An alternative method might be to use the latest years unclassified written premiums which would be one year later and, therefore, more current.

CONCLUSION

Fire insurance ratemaking as exemplified by the New York revision has been improved by the inclusion in the rate level study of the results of the latest year. The adverse trend has been taken into account in the use of weighted experience results.

The expense allowance should prove adequate for a well managed business. Profit and conflagration factors totalling 6% have been allowed as requested by industry.

Should the adverse loss trend continue, it is to be hoped that the authorities will consent to the use of the modified term factors leaving the results to work themselves out in subsequent revisions.