PRICING THE CATASTROPHE EXPOSURE IN PROPERTY INSURANCE RATEMAKING

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According to the **Statement of Principles Regarding Property and Casualty Insurance Ratemaking**, consideration must be given to the impact catastrophes have on loss experience and procedures must be developed to include an allowance for the catastrophe exposure in the insurance rate. This paper updates and expands on the authors' 1990 Discussion Paper, "Pricing the Catastrophe Exposure in Homeowners Ratemaking."

The paper details the calculation of the Homeowners provision for catastrophes at the statewide level. Varying the catastrophe provision below the statewide level, for example by coastal versus inland or east versus west, is addressed and methods are presented to determine a provision for other property lines based on the Homeowners provision.

PRICING THE CATASTROPHE EXPOSURE
IN PROPERTY INSURANCE RATEMAKING

The original paper on this topic was presented at the May, 1990 meeting of the Casualty Actuarial Society.[1] The methodology presented in that paper was based on analyses of data through 1988. The paper discussed a method of determining the Homeowners catastrophe provision at the statewide level with separate treatments of hurricane and non-hurricane exposures. The authors assume basic knowledge of that methodology.

Obviously a great deal has happened since 1988, including three major hurricanes, numerous large hail storms, winter freezes and significant tornado activity. This paper updates the methodology originally presented to reflect minor revisions brought about by hurricanes Hugo and Andrew. In addition, procedures are now utilized to distribute the catastrophe provision to territories within a state based on relative exposure to catastrophe loss as well as to determine the appropriate catastrophe provision for property lines other than Homeowners.

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[1]: Farris, W. Scott and Hays, David H., "Pricing the Catastrophe Exposure in Homeowners Ratemaking," Casualty Actuarial Society 1990 Discussion Paper Program, pages 559-604

The needed catastrophe provision per exposure is determined separately for hurricane and non-hurricane catastrophes using the following formula:

(1) $Provision = \mu + t \times \sigma$

where μ = *average catastrophe loss per exposure*

t = *t-statistic for the desired confidence*

σ = *unbiased standard deviation of the mean catastrophe loss*

For reasons fully explained in the 1990 paper[2], the exposure used from this point is **Amount of Insurance Years (AIY)**. AIY is defined as $1,000 of building coverage in force for one year. The statistic is sensitive to inflation, policy growth and changes in building costs.

The provision can be multiplied by the projected exposure to determine the catastrophe provision in dollars or by exposure per premium to determine the catastrophe provision per dollar of premium.

$$(2.1)\quad Cat\$ = \frac{Cat\$}{Exposure} \times Exposure$$

$$(2.2)\quad \frac{Cat\$}{Premium} = \frac{Cat\$}{Exposure} \times \frac{Exposure}{Premium}$$

[2] IBID, page 565

Non-Hurricane Catastrophes

Companywide

After due consideration to the financial position of the company and to reinsurance, the management of the company can determine the confidence it desires in its companywide non-hurricane catastrophe provisions. The company's needed catastrophe provision can be estimated by analyzing historical catastrophe data and using formula (1) to determine its needed catastrophe provision per exposure. The needed dollars of catastrophe "premium" can be estimated by multiplying the provision by projected exposures, see formula (2).

Individual States

In order to recognize that the financial resources of a company are available for the protection against extremely large occurrences and to provide for rate stability in individual states, individual catastrophe losses are limited or capped prior to calculating an individual state's catastrophe provision. The cap should be established such that only extremely rare occurrences are censored. *In this paper, we have capped the worst 5% of the occurrences* over the last 26 years. Since individual occurrences are capped, and since the companywide catastrophe premium is simply the sum of the individual states, it is likely that a provision in excess of the statewide "capped mean" will be necessary in order to achieve the companywide needed catastrophe premium.

For example, the following table is extracted from the 1990 paper[3]. It assumes individual catastrophes are censored at $0.59 x statewide exposures and that a 90% confidence that the companywide catastrophe provision will cover catastrophes over the long run is desired.

TABLE #1
Non-Hurricane Catastrophe Provisions

Confidence Interval	Sum of States Uncapped	Sum of States Capped	Companywide Uncapped
50%	**0.3334**	0.2682	0.3151
55	0.3825	0.2998	0.3198
60	0.4328	0.3323	0.3247
65	0.4848	**0.3657**	0.3297
70	0.5392	0.4008	0.3349
75	0.5988	0.4392	0.3406
80	0.6657	0.4823	0.3471
85	0.7447	0.5332	0.3546
90	0.8452	0.5981	**0.3643**
95	0.9999	0.6973	0.3791

The companywide needed provision is not attained unless the statewide provision is calculated using a 65% confidence interval about the **capped** statewide mean. That provision also produces results consistent with a provision using the uncapped mean in each state.

[3]: IBID, page 579

Hurricanes

Companywide

Based on a company's financial strength, operating objectives and the availability of reinsurance, a hurricane provision can be derived such that the company management can be certain to cover **LONG TERM** hurricane losses with a desired confidence.

The formula for determining the companywide provision is identical to the Non-Hurricane provision.

(3) $\mathit{Provision} = \mu + t \times \sigma$

where μ = *average catastrophe loss per exposure*

t = *t-statistic for the desired confidence*

σ = *unbiased standard deviation of the mean hurricane loss*

A company's hurricane data may be sparse. Therefore it may be appropriate to modify company data or to substitute data from other sources. External data can be either historical or simulated. When using simulated data, the results of the simulation must be monitored to ensure that estimated severities by wind speed and landfall correlate with actual results. If they do not, simulated severity could be used to establish relationships among geographic areas.

One easy adjustment to a company's hurricane data that can be made is to adjust the frequencies of the various hurricanes in the company sample to reflect known historical frequencies over a longer period. The number of hurricane occurrences by wind speed and landfall is available from various sources for at least 122 years. If a company can identify the wind speed and the landfall for the hurricanes in its data, the adjustment to known frequencies can be accomplished by the following formula:

$$(4) \quad E(h) = H \times \frac{F \times Y}{N \times 100}$$

Where,

E(h)	=	Dollars of loss for an individual hurricane
H	=	Dollars of loss for the hurricane adjusted to current inflation and exposure distribution.
Y	=	Number of Years in the sample data.
N	=	Observed number of occurrences by intensity and windspeed.
F	=	Expected 100 year frequency from external sources.

In this formula the 122 year frequencies have been converted to a "100 year basis" for ease of calculation. This adjustment to hurricane data is illustrated in Appendix C using data presented on Exhibit D (Appendix B - Page 13.) The resulting restated hurricane losses are used in the determination of the companywide hurricane provision (see Appendix B - Pages 6 and 11.)

Individual States

Due to the limited hurricane data that is present, it is not appropriate to set a state's hurricane provision based on state data alone. One method to achieve the companywide need is to allocate the needed companywide premium to the affected coastal states. In the 1990 paper[4], hurricane dollars are allocated to three hurricane groups; Gulf, Mid-Atlantic and North Atlantic, based on the relative frequency and median severity. The groups were identified based on states with similar historical frequencies and relative severities.

As has been emphasized, hurricane experience on a companywide basis is sparse and difficult to analyze. Consequently, group provisions cannot be established based solely on the data for that group. It is possible to establish relationships between groups and based on relative exposure to loss, develop the appropriate allocation of the companywide n
eed for each group.

The relative frequency measures the probability of an occurrence in the group. The median hurricane severity is a measure of central tendency of losses in a group. The product provides a method of determining a group's relative exposure to hurricane loss. Allocations based on similar measures of relative exposure may be substituted as deemed appropriate.

[4] IBID, Page 582

The allocation to group is established based on the following:

$$(5) \quad RG_i = \frac{P_i}{P_{CW}}$$

where :

RG_i = allocation factor - Group i

$P_i = F_i \times S_I$

F_i = number of occurrences - Group i

S_i = Median severity of an occurrence - Group i

$P_{CW} = \sum F_i \times S_i$

This group allocation factor is illustrated on Exhibit C (Appendix B - Page 12.) Based on relative frequency and median severities of the three groups, the Gulf Coast Group allocation factor is 91.0.

Individual State Relativities

Once the relativity for the group has been established, the relativity for states within a group is needed. Assume the probability of an occurrence is the same for each state within the group and that the distribution by intensity is about the same. The deciding factor in determining expected loss is then exposure. Two types of exposure are present, the immediate exposure (within 100 miles of the coast) and the secondary exposure (statewide). Hurricanes can often travel far inland although at reduced speeds, and spawn tornadoes that can also be a major cause of damage. Assuming a 50%/50% weighting of coastal and statewide exposures, a state allocation factor based on the two exposures is shown in Equation 6.

$$(6)\quad RS_j = .5 \times \frac{EC_i}{EC_G} + .5 \times \frac{ES_I}{ES_G}$$

where:

RS_j = *allocation factor - State j*

EC_i = *AIY - counties within* 100 *miles of the coast*

ES_i = *Statewide AIY*

EC_G = $\sum$ *AIY within* 100 *miles of coast - Group*

ES_G = $\sum$ *AIY - all states of the Group*

State relativities are illustrated on Exhibit C (Appendix - Page 12.) For example, State E has 40.6% of the exposures in the Gulf Coast states and 21.3% of the Gulf Coast exposure within 100 miles of the coast. The resulting State E allocation factor is 31.0%

Individual State Provision

Once the group and state relativities are established, the State provision is determined by an allocation of the companywide need:

$$(7) \quad PROV_j = PROV_{CW} \times \frac{E_{CW}}{E_j} \times RG_i \times RS_j$$

Where:

E_j = AIY - State j

E_{CW} = AIY - Companywide

RG_i = Allocation factor - Group i

RS_j = Allocation factor - State j

$Prov_j$ = Hurricane provision for State j

$Prov_{CW}$ = Companywide hurricane provision

The Gulf Coast, State E provision is illustrated on Appendix B -Page 6.

CONFIDENCE

There may be some concern that a catastrophe provision in excess of the mean introduces another "contingency or risk provision" into the ratemaking formula. The contingency provision is necessary to reflect that there are additional costs not otherwise accounted for in our ratemaking and pricing. Although unpredictable, these additional costs recur each and every year, or "systematically" and produce a bias in ratemaking. They cannot be predicted, quantified and made a part of the ratemaking model.

The catastrophe provision is not an estimate of catastrophe losses for the period rates are to be in effect. It is the value required by the insurance company to assume the risk of catastrophe loss for the policy period. It must be designed to provide enough premium dollars to cover catastrophe losses in the **LONG-RUN**. The **Ratemaking Principles**, in *III. Considerations*, calls it "an allowance for the catastrophe exposure in the rate."

Is it important to recognize that at any point in time the sample mean catastrophe per exposure may not provide enough premium to pay for long term catastrophes? Recent events would suggest that it is appropriate for the catastrophe allowance to provide enough premium dollars to pay for catastrophe losses over the **LONG TERM** rather than in each and every year a policy is to be in effect. For company management to be reasonably certain they have accounted for all catastrophes, it is not only appropriate but imperative that they account for the variability of the data in the determination of the allowance. In many circumstances, it would be unwise for a company to determine its catastrophe provision based soley on its companywide sample mean catastrophe per exposure.

The use of a confidence interval about the mean of available catastrophe data is not an additional "contingency or risk provision." Rather, it is an explicit recognition that the sample mean is NOT the true mean of the distribution of long term catastrophe losses. If it were, hurricane Andrew would have had no impact on a company's sample mean catastrophe.

PROVISION FOR LINES OTHER THAN HOMEOWNERS

The procedure described can be used to determine the provision for any line of business for which data is available and of sufficient volume. It can also be used within the Homeowners line for tenant and non-tenant policies if data is sufficient. It is unlikely, unless the company is a specialty carrier, that the experience volume of property other than Homeowners or of tenant business will be of sufficient volume to be used as the basis for catastrophe exposure. The relationship between other property and Homeowners should, however, prove to be fairly stable. It is reasonable, then, for the catastrophe provision for property lines other than Homeowners to be based on the Homeowners provision calculated using the procedures outlined.

Relationship to Homeowners

It is possible to develop the expected relationship between the catastrophe provision per exposure for an individual program and the Homeowners catastrophe provision per exposure. This relationship can be determined by standard regression analysis for the individual state or for the programs on a companywide basis. It must be recognized that for all but the largest states, the relationship between the catastrophe experience for property lines will likely vary significantly from year to year. With insufficient data in a state, it may be advisable to determine the expected relationship companywide and apply the same relationship to each and every state, varying only where individual state circumstances make it obvious that the companywide relationship will not hold.

For an individual program, the companywide relationship can be determined using the linear regression;

$$(8)\quad \left(\frac{\$CAT}{AIY}\right)_i = \alpha \ PLUS \ \left(\frac{\$Cat}{AIY}\right)_{HO} \times \beta_i$$

$$with\ \alpha = 0,\ so$$

$$\left(\frac{\$Cat}{AIY}\right)_i = \left(\frac{\$Cat}{AIY}\right)_{HO} \times \beta_i$$

where β_i = Relationship between Line i and Homeowners.

The underlying assumption is that Homeowners is of sufficient volume such that there are Homeowners property claims whenever there is a catastrophe event. Therefore, if there were no Homeowners coded catastrophe claims, one could conclude there were no catastrophes and the expected claims for other lines would also be zero.

For example, non-tenant Homeowners non-hurricane and hurricane catastrophe data are shown on Appendix B - Pages 15 and 16. This data suggests that \$ 1 of Homeowners loss per exposure is equivalent for non-tenant Homeowners to \$1.05 of non-hurricane loss and \$1.03 of hurricane loss (see Appendix B - Page 14.)

State Provisions for Lines Other Than Homeowners

The same β can be applied to the state's Homeowners catastrophe provision to determine the catastrophe provision in a line of business for the particular state. Separate β's should be determined for non-hurricane and hurricane catastrophes and applied to the state's non-hurricane and hurricane Homeowners provisions, respectively.

PROVISIONS FOR REGIONS WITHIN A STATE

There are circumstances, primarily geographical, that suggest the catastrophe provision per exposure should vary within a state. Obviously, exposure to hurricane loss varies according to the proximity to the coast. In addition, exposure to hail losses varies significantly in the Rocky Mountain states. It is logical to recognize the different frequencies and/or severities of catastrophe losses in a state where appropriate.

Non-Hurricane Catastrophes

The distribution of a state's non-hurricane catastrophes is a two-step process. The first step is the determination of which regions of the state should be segregated into distinct catastrophe zones. Catastrophe zones can be determined based on available catastrophe experience. However, even a state's catastrophe experience may be limited. Geographic considerations, informed judgment, population density or any combination of these factors will ultimately play a major role in the determination of catastrophe zones.

Much like the determination of the hurricane provision by group, the appropriate non-hurricane catastrophe provision by group can be determined using relativities of catastrophes per exposure. These relativities should be based on the distribution of catastrophes in the experience period. The distribution of catastrophes can be measured using the historical frequency of catastrophe in the group times the severity per exposure of the catastrophe. The severity per exposure(AIY) represents a measure of central tendency for an occurrence relative to the exposure covered. Central tendency can be measured using the average observed severity or, if an extreme value is present in the data, the median severity. If modeling capabilities exist and results are reliable, a model generated severity could be used instead.

Assuming frequencies and severities can be determined by catastrophe group, indicated relativities can be established. A selected relativity is used to determine the catastrophe provision by catastrophe group.

$$(9) \quad \left(\frac{\$Cat}{AIY}\right)_i = \left(\frac{\$Cat}{AIY}\right)_{SW} \times Rel_i$$

Where, Rel_i = the selected relativity of the catastrophe provision per exposure for catastrophe Zone i (relative to statewide).

For Catastrophe Zone i, the catastrophe provision expressed as a percent of premium is:

$$(10) \quad \frac{CAT_i}{EP_i} = \frac{CAT_{SW}}{AIY_{SW}} \times REL_i \times \frac{AIY_i}{EP_i}$$

In tabular form:

	Catastrophe Zone				
	1	2		k	Statewide
AIY	e_1	e_2	.....	e_k	
Frequency	f_1	f_2	.....	f_k	
Severity/AIY	s_1	s_2	.....	s_k	
Pure Premium/AIY	p_1	p_2	.....	p_k	p_{sw}
Relativity	r_1	r_2	.....	r_k	1.000
Provision	$(\$Cat/e)_1$	$(\$Cat/e)_2$	.....	$(\$Cat/e)_k$	$(\$Cat/e)_{sw}$

Where:

(11.1) $p_i = f_i \times s_i$

(11.2) $p_{sw} = \sum_{1}^{k} \frac{f_i \times s_i \times e_i}{\sum_{1}^{k} e_i}$

(11.3) $r_i = \frac{p_i}{p_{sw}}$

(11.4) $(\$\frac{Cat}{e})_i = (\$\frac{Cat}{e})_{sw} \times r_i$

For example, Table #2 below (see also Appendix B - Page 8) represents 3 distinct catastrophe groups (labeled I, II and III) and the statewide catastrophe provision per AIY is 0.5657. If the selected relativity for the catastrophe group I is 0.1300, the catastrophe provision per exposure is 0.0735 and the catastrophe provision as a percent of premium is 1.4%.

TABLE #2
Non-Hurricane Catastrophe Provision by Catastrophe Zone

	Catastrophe Zone			
	I	II	III	STATEWIDE
Exposures (,000's)	1,520	560	7,920	10,000
Frequency	15	8	15	
Severity/1,000 AIY	$ 22	$175	$200	
Freq x Severity	$330	$1,400	$3,000	$2,505
Relativity(Indicated)	0.1318	0.5590	1.1978	1.0000
Relativity(Selected)	0.1300	0.5600	1.2000	1.0000
$Cat/AIY	0.0735	0.3168	0.6788	0.5657
EP/AIY	5.3684	4.0000	5.0000	5.0000
$Cat/EP	1.4%	7.9%	13.6%	11.3%

As in the hurricane allocation, occurrences need not be mutually exclusive. An event may affect more than one catastrophe group.

For the Catastrophe Zone I:

$$(12)\quad \frac{CAT_I}{EP_I} = .5657 \times 0.1300 \times \frac{1}{5.3684}$$
$$= 1.4\%$$

It can be shown (see Appendix A) that the relativity allocation by catastrophe group produces the same result as the hurricane allocation method presented earlier.

Hurricanes

The distribution of a state's hurricane provision to areas within the state is identical to the distribution of non-hurricane. However, the indicated relativity probably cannot be determined based on internal data.

Expected hurricane losses per exposure will obviously vary based on the proximity to the coast and by landfall. Historical loss data by landfall and storm intensity, if it exists, will likely not be sufficient for prospective pricing. It is reasonable to use reliable simulation models to determine the expected severity of occurrences by landfall. Based on the historical frequencies, simulated severities, informed judgment and geographic knowledge of the area, hurricane zones may be established.

Once hurricane zones are established, estimated frequencies and simulated severities by intensity of hurricane and landfall can be determined. The process of establishing the hurricane provision by hurricane zones, then, is identical to non-hurricane catastrophes by catastrophe group.

For example, if it is determined in a state that there are three distinct landfalls and four distinct hurricane zones, severities can be modeled by intensity of hurricane and estimated frequencies can be used to determine the expected pure premium for hurricane by zone. Table #3 (see also Appendix B - Page 8) presents statewide data that is based on individual landfall frequencies presented on Appendix B - Page 13 and simulated severities. Once the relativities by zone are selected, the catastrophe provision by hurricane zone can be found in a manner identical to the determination of the non-hurricane catastrophe provision by catastrophe group.

TABLE #3

Hurricane Provision by Hurricane Zone

Hurricane Zone

	A	B	C	D	STATEWIDE
AIY(,000's)	2,535	393	2,663	4,408	10,000
Pure Premium	$76.75	$56.90	$4.71	$0.18	$23.03
Relativity					
Indicated	3.3326	2.4707	0.2045	0.0078	1.0000
Selected	3.3300	2.4710	0.2040	0.0080	1.0000
$HCat/AIY	2.3044	1.7099	0.1412	0.0055	0.6920
EP/AIY	4.4202	4.5000	4.8000	5.5000	5.0000
$HCat/EP	52.1%	38.0%	2.9%	0.1%	13.8%

For the Hurricane Zone A:

$$(13)\quad \frac{\$HCAT_A}{EP_A} = \frac{\$HCAT_{STATE\ E}}{AIY_{STATE\ E}} \times REL_A \times \frac{AIY_A}{EP_A}$$

$$= .6920 \times 3.3300 \times \frac{1}{4.4202}$$

$$= 52.1\%$$

Total Catastrophe Provision - Example

Appendix B contains a complete example of a Non-Tenant Homeowners catastrophe provision. This example illustrates the determination of (1) the Statewide Homeowners non-hurricane and hurricane provisions, (2) the method to determine the Non-Tenant Homeowners provision based on the Homeowners provision and (3) the determination of the non-hurricane and hurricane provisions by zone within the state.

The total catastrophe provision for any geographic area is the sum of the non-hurricane and hurricane components. For example, using Pages 8 and 9 of Appendix B, a county in non-hurricane Catastrophe Zone I and Hurricane Zone A, has a catastrophe provision per AIY of 0.0772+2.3736=2.4508.

CONCLUSION

It has never been more important that the catastrophe provision in the rate level be adequately reflected. Without an adequate catastrophe provision in the rates, a company will ultimately deplete its resources impairing its ability to grow and serve the increasing needs of its customers. Solvency may even be threatened. A company must recognize that provisions established solely on the company's historical mean will likely yield an inadequate allowance. The use of standard statistical tools coupled with external data should play a major role in the determination of a proper allowance.

If possible a company should reflect different exposure to catastrophe below the state level and vary its catastrophe provision accordingly. We **must** continue to improve the industry's ability to properly determine the catastrophe allowance in the rate level.

Appendix A

Two different procedures are used in the paper to determine the hurricane provision by state and the non-hurricane catastrophe provision in areas within a state. An allocation method is used to determine the state's hurricane provision as it is a multi-step procedure -- first the group's provision is determined and then the state's. Catastrophe provisions by territory within a state can be determined in a single step using a relativity procedure.

Although slightly different in application, the two procedures are mathematically equivalent as is demonstrated below.

$$(14)\quad \bar{R}_i = \frac{\bar{P}_i}{\sum \bar{P}_i}$$

$$= (F_i \times \bar{S}_i) \times \frac{\sum E_i}{\sum (F_i \times \bar{S}_i \times E_i)}$$

$$= \frac{F_i \times S_i}{E_i} \times \frac{\sum E_i}{\sum (F_i \times (S_i/E_i) \times E_i)}$$

$$= \frac{F_i \times S_i}{\sum (F_i \times S_i)} \times \frac{\sum E_i}{E_i}$$

$$= \frac{P_i}{\sum P_i} \times \frac{\sum E_I}{E_I}$$

$$= R_i \times \frac{\sum E_i}{E_i}$$

Where:	E_i	=	Exposure (Amount of Insurance Years)
	F_i	=	Number of occurrences
	S_i	=	Average loss per occurrence
	$\bar{S}_i$	=	Average loss per occurrence per AIY
		=	S_i / E_i
	P_i	=	pure premium = F_i x S_i
	P_i	=	pure premium per AIY = F_i x $\bar{S}_i$
	R_i	=	Allocation factor for Group i
	R_i	=	Group I Pure Premium Relativity - using Average Severity

APPENDIX B

GULF STATE E HOMEOWNERS NON-TENANTS CATASTROPHE PROVISION

For ratemaking purposes, all catastrophe losses should be removed from the loss data. These occurrences are unusual, fortuitous events which are generally unpredictable and usually weather-related. Each state's catastrophe losses are analyzed separately and a catastrophe provision is developed according to the following procedure and used in the ratemaking formula. In those states with a hurricane exposure, a hurricane provision is developed independently (Page 4) to ensure adequate hurricane premium on a companywide basis.

To obtain a reasonable estimate of Homeowners Non-Tenants catastrophe provision, Homeowners data is compared to Homeowners Non-Tenants on a companywide basis.

NON-HURRICANE CATASTROPHE PROVISION

I. Amount of Insurance Years Exposure Base

The Amount of Insurance Years statistic (AIY) measures $1,000's of building insurance in force for one year. For example, a $100,000 dwelling insured on January 1st and in force continuously for that year equals 100 Amount of Insurance Years. Amount of Insurance Years reflects changing values and represents an accurate measure of our exposure to catastrophic loss.

II. Catastrophe Data Used

Large, fortuitous and unpredictable losses are coded as catastrophe losses and removed from the loss data used to forecast the paid loss per policy explained in the preceding exhibits. Homeowners individual catastrophe losses since 1967 are used to determine the Homeowners catastrophe provision (Page 10).

To recognize that large catastrophic events such as a tornado can happen anywhere and can have a devastating effect on an individual state's experience, the severity of individual catastrophes are limited in calculating the state's catastrophe provision. The largest 5% of catastrophes per AIY Companywide are limited prior to entering the calculation of catastrophe provisions by state. Therefore, any individual catastrophe which exceeds $0.60 per statewide AIY in the year of occurrence is limited to $0.60 per AIY. The statewide annual aggregate catastrophe is the sum of the individual capped catastrophes for that year.

GULF STATE E HOMEOWNERS NON-TENANTS
CATASTROPHE PROVISION

III. Homeowners Catastrophe Provision

Each state's limited catastrophe losses (as explained above) since 1967 are analyzed as a factor per statewide AIY (Page 10). The mean and standard deviation of the data are calculated. Given current financial condition and the variability in the limited catastrophe data, the company desires to be at least 65% certain that the rate level adequately provides for anticipated limited catastrophes in any given state for the period rates are to be in effect.

IV. Homeowners Non-Tenants Catastrophe Provision

Companywide Homeowners Non-Tenants Cats/AIY are compared to Companywide Homeowners Cats/AIY using linear regression (Page 14). An alpha of zero is assumed so that fitted values have a zero value in years when no catastrophes occurred.

The beta value from the model is applied to the Homeowners provision per AIY to generate a provision per AIY for Homeowners Non-Tenants. The provision is multiplied by the projected AIY to arrive at a dollar provision.

GULF STATE E Homeowners Non-Tenants (HO NT) Non Hurricane Provision

Year	Homeowners Cat. Per AIY (1)	HO NT Cat. BETA Factor (2)	HO NT Cat. Per AIY (3) (1 X 2)	Projected HO NT AIY (4)	Catastrophe Premium (5) (3 X 4)
1993	.5657	1.0500	.5940	10,000,000	5,940,000
1994	.5657	1.0500	.5940	10,799,213	6,414,733
1995	.5657	1.0500	.5940	12,598,635	7,483,589

GULF STATE E HOMEOWNERS NON-TENANTS
CATASTROPHE PROVISION

EXPLANATION OF COLUMNS

Column (1) : Homeowners Catastrophe Provision Per AIY

The catastrophe provision is chosen such that the company can be 65% certain, given historical data, that the provision will provide enough premium dollars to cover catastrophes, limited in severity, during the period premiums are to be in effect. Individual catastrophes are limited to $0.60 per statewide AIY prior to the calculation (Page 10).

The provision per AIY is determined recognizing the variability of the limited catastrophes over the historical period as follows:

Provision = .5312 + (.3900 x .0884)
= .5657

Where:

.5312 = mean $ capped Catastrophe per AIY
.3900 = 65% t-statistic for 25(26-1) degrees of freedom
.0884 = standard deviation of $ capped Catastrophe per AIY.

Column (2) : Beta Factor

A linear regression is performed on Cat/AIY data for Homeowners Non-Tenants vs. Homeowners using the model Y = beta X + 0. An alpha coefficient of 0 is used so that Homeowners Non-Tenants cats have 0 values when Homeowners cats are zero.

Column (3) : Homeowners Non-Tenants catastrophe provision per AIY.

Column 1 times Column 2.

Column (4) : Projected Amount Of Insurance Years (AIY)

The exposure to catastrophes Companywide for the next three calendar years is measured by multiplying the latest year end actual AIY per average PIF times the projected average PIF and the expected change in inflation.

Column (5) : Needed Catastrophe Premium

The product of the projected exposures and the catastrophe provision equals the needed catastrophe premium.

GULF STATE E HOMEOWNERS NON-TENANTS
HURRICANE PROVISION

Hurricanes are solvency-threatening events which by their very nature are difficult to predict. Therefore, hurricane losses are separated from non-hurricane losses in the analysis of catastrophes. Again, because of limited Homeowners Non-Tenants data, the relationship between the Homeowners Non-Tenants exposure and the Homeowners exposure is used to determine the Homeowners Non-Tenants hurricane provision.

Due to the volatility of the data, analyzing losses on a state basis produces results that are neither stable or indicative of the relative exposure to loss for that state.

It is reasonable to first establish a hurricane provision per exposure on a companywide basis. Contributions to the companywide need are determined for each geographic area (group of states) with a similar exposure to hurricanes. A hurricane provision by state is determined based on the state's exposures relative to the exposures of the group.

I. Companywide Homeowners Hurricane Provision

Dollars of companywide hurricane loss (since 1959) are adjusted to current exposures and 100 year frequency levels. The adjustment to current exposures is accomplished by dividing the actual hurricane dollars incurred by the amount of exposure in the year of occurrence. The result is multiplied by the amount of exposure in force for the current year.

Based on 122 years of hurricane observations along the Gulf and Atlantic coasts the probability of hurricane activity per 100 years by landfill and relative size of the storm is calculated. The actual frequency is the number of observations in the 34 year sample by landfall and relative size of storm divided by 34. Each occurrence is adjusted to 100 year frequencies by dividing the incurred dollars by the actual frequency, then multiplying by the 100 year frequency.

The result is dollars of loss restated in 1992 dollars and adjusted for 100 year frequency (Exhibit B). The mean and standard deviation are calculated and a factor per AIY selected such that the company can be 90% certain, given historical data, that hurricane losses will not exceed hurricane premium.

II. Homeowners Hurricane Groups

Hurricane losses can affect any coastal state. However, certain states share a similar exposure to hurricane loss. Three groups with similar exposures are used: Gulf Coast, Mid-Atlantic and North-Atlantic. The companywide hurricane premium is determined by multiplying the companywide provision per AIY by latest year's companywide AIY. The companywide need for the latest year is allocated to the three groups based on the group's relative exposure. Relative exposure is measured by the group's median annual dollars of loss (in years with an occurrence) times the fractional number of years with an occurrence (in that group). The dollars allocated to a particular group are the companywide need times the group's relative exposure divided by the sum of all relative exposures.

III. Homeowners Individual State Hurricane Provision

The probability that a hurricane makes landfall in a particular state and the severity of the resulting loss cannot be reasonably estimated using historical data. However states within groups exhibit the same exposure to loss based on the insured liability near the coast and in the state as a whole. Group hurricane losses are therefore allocated to state based on an average of a state's relative exposure (AIY) in counties within 100 miles of the coast and statewide. The group hurricane provision is multiplied by the projected exposures in the individual state to derive the hurricane premium. The hurricane premium is divided by the projected AIY for use in the ratemaking formula.

IV. Homeowners Non-Tenants Individual State Hurricane Provision

The relationship of actual Homeowners Non-Tenants hurricane data to Homeowners hurricane data is much too volatile to analyze on a state basis. Even on a companywide basis, a few large hurricanes skew the Homeowners Non-Tenants hurricane data. In turn, the relationship between Companywide Homeowners Non-Tenants catastrophe data (Page 14) and Companywide Homeowners data is measured over the last 11 years and used to determine a Companywide Homeowners Non-Tenants to Homeowners relationship.

The Homeowner provision per AIY for Companywide is multiplied by the appropriate factor for Homeowners Non-Tenants. The result is multiplied by projected AIY to arrive at the projected Homeowners Non-Tenants dollar hurricane provision.

COMPANYWIDE HOMEOWNERS NON-TENANTS
HURRICANE PROVISION

I. COMPANYWIDE HOMEOWNERS HURRICANE PROVISION

The hurricane provision is chosen such that the company can be 90% certain, given historical data, that the provision will accumulate enough premium dollars to cover hurricane losses.

The provision per AIY is determined recognizing the variability of the hurricane losses over the historical period as follows:

Provision = .2630 + (1.3080 x .1263)
= .4282(rounded)

Where:

.2630 = mean $ hurricane per AIY
1.3080 = 90% t-statistic for 33(34-1) degrees of freedom
.1263 = standard deviation of the mean hurricane per AIY

II. HOMEOWNERS HURRICANE PROVISION FOR GULF STATE E

$$\text{Hurricane Provision} = \text{C/W Hurricane Provision} \times \frac{\text{1992 C/W AIY}}{\text{GULF STATE E 1992 AIY}} \times \text{Group Allocation Factor} \times \text{GULF STATE E Allocation Factor}$$

$$= .4282 \times \frac{57,355,992}{10,000,000} \times 0.9101 \times 0.3096$$

$$= .4282 \times 5.7356 \times 0.9101 \times 0.3096$$

$$= .6920$$

III. NEEDED NON-TENANT HURRICANE PREMIUM FOR GULF STATE E

Year	GULF STATE E Homeowners Hurricane Per AIY (1)	COMPANYWIDE Relationship HO NT to HO (2)	HO NT Hurricane Per AIY (3) (1 X 2)	Projected HO NT AIY (4)	Needed HO NT Hurricane Premium (5) (3 X 4)
1993	0.6920	1.0300	0.7128	10,000,000	7,128,000
1994	0.6920	1.0300	0.7128	10,799,213	7,697,679
1995	0.6920	1.0300	0.7128	12,598,635	8,980,307

GULF STATE E
TOTAL CATASTROPHE PREMIUM

GULF STATE E Homeowners Non-Tenants (HO NT) Non-Hurricane Provision

Year	Homeowners Cat. Per AIY (1)	HO NT Cat. BETA Factor (2)	HO NT Cat. Per AIY (3) (1 X 2)	Projected HO NT AIY (4)	Catastrophe Premium (5) (3 X 4)
1993	.5657	1.0500	.5940	10,000,000	5,940,000
1994	.5657	1.0500	.5940	10,799,213	6,414,733
1995	.5657	1.0500	.5940	12,598,635	7,483,589

GULF STATE E Homeowners Non-Tenants (HO NT) Hurricane Provision

Year	GULF STATE E Homeowners Hurricane Per AIY (1)	COMPANYWIDE Relationship HO NT to HO (2)	HO NT Hurricane Per AIY (3) (1 X 2)	Projected HO NT AIY (4)	Hurricane Premium (5) (3 X 4)
1993	0.6920	1.0300	0.7128	10,000,000	7,128,000
1994	0.6920	1.0300	0.7128	10,799,213	7,697,679
1995	0.6920	1.0300	0.7128	12,598,635	8,980,307

GULF STATE E Homeowners Non-Tenants (HO NT) Total Catastrophe Provision

Year	GULF STATE E Non Hurricane Catastrophe / AIY (1)	Hurricane Catatstrophe/ AIY (2)	Total Catastrophe / AIY (3) (1 + 2)	Projected HO NT AIY (4)	Needed HO NT Hurricane Premium (5) (3 X 4)
1993	.5940	0.7128	1.3068	10,000,000	13,068,000
1994	.5940	0.7128	1.3068	10,799,213	14,112,412
1995	.5940	0.7128	1.3068	12,598,635	16,463,896

HOMEOWNERS TERRITORY CATASTROPHE PROVISION

NON-HURRICANE PROVISION

The historical non-hurricane experience for GULF STATE E varies by geographic area. Three zones have been established based on relative number of occurrences and the loss per exposure per occurrence. The state provision is allocated to the three territories based on their relative exposure to loss as follows.

Catastrophe Zone

	I	II	III	Statewide
AIY	1,520	560	7,920	10,000
Frequency	15	8	15	
Severity/1000 AIY	$ 22	$ 175	$ 200	
Pure Premium	$ 330	$ 1,400	$ 3,000	$ 2,505
Relativity				
Indicated	0.1318	0.5590	1.1978	1.0000
Selected	0.1300	0.5600	1.2000	1.0000
Homeowner $ CAT/AIY	0.0735	0.3168	0.6788	0.5657
Non-Tenant $ CAT/AIY	0.0772	0.3326	0.7128	0.5940

HURRICANE PROVISION

Hurricane zones have been established based on proximity to the coast and to the various landfalls along the coast. The number of occurrences by landfall is available for the last 122 years. The state provision is allocated to the three territories based on their relative exposure to loss as follows.

Hurricane Zone

	A	B	C	D	Statewide
AIY	2,535	393	2,663	4,408	10,000
Pure Premium	$ 76.75	$ 56.90	$ 4.71	$ 0.18	$ 23.03
Relativity					
Indicated	3.3326	2.4707	0.2045	0.0078	1.0000
Selected	3.3300	2.4710	0.2040	0.0080	1.0000
Homeowner $ CAT/AIY	2.3044	1.7099	0.1412	0.0055	0.6920
Non-Tenant $ CAT/AIY	2.3736	1.7613	0.1454	0.0057	0.7128

TERRITORY CATASTROPHE PROVISION

(Continued)

HOMEOWNERS TERRITORY PROVISION

The Homeowners provision for a territory can be determined by adding the Homeowners Non-hurricane provision and the Homeowners Hurricane provision per AIY together for the appropriate combinations. The combinations by Hurricane Zone and Non-hurricane zone are shown below.

Hurricane Zone	Catastrophe Zone I	II	III	Total
Zone A	2.3779	2.6212	2.9832	2.8701
Zone B	1.7834	2.0267	2.3887	2.2756
Zone C	0.2147	0.4580	0.8200	0.7069
Zone D	0.0790	0.3223	0.6843	0.5712
Total	0.7655	1.0088	1.3708	1.2577

The Homeowners Cat/AIY is multiplied by Homeowners AIY/EP for each rating territory to obtain a provision expressed as a percentage of premium.

NON TENANT TERRITORY PROVISION

The Non Tenant provision for a territory can be determined by adding the Homeowners Non-hurricane provision and the Non Tenant Hurricane provision per AIY together for the appropriate combinations. The combinations by Hurricane zone and Non-hurricane zone are shown below.

Hurricane Zone	Catastrophe Zone I	II	III	Total
Zone A	2.4508	2.7062	3.0864	2.9676
Zone B	1.8385	2.0939	2.4741	2.3553
Zone C	0.2226	0.4780	0.8582	0.7394
Zone D	0.0829	0.3383	0.7185	0.5997
Total	0.7900	1.0454	1.4256	1.3068

The Non Tenant Cat/AIY is multiplied by Non Tenant AIY/EP for each rating territory to obtain a provision expressed as a percentage of premium.

EXHIBIT A

GULF STATE E
CATASTROPHE PROVISION
EXCLUDING HURRICANE CATASTROPHES

Year	Amount of Insurance Years	Catastrophe Dollars	Capped Catastrophe Dollars	Capped Cats. per AIY
1967	255,911	0	0	0.0000
1968	298,531	202,143	202,143	0.6771
1969	341,387	461,211	218,128	0.6389
1970	379,943	3,780	3,780	0.0099
1971	427,363	535	535	0.0013
1972	483,373	128,409	128,409	0.2657
1973	540,349	105,171	105,171	0.1946
1974	671,343	399,621	399,621	0.5953
1975	847,340	321,305	321,305	0.3792
1976	1,049,894	1,449,043	1,366,376	1.3014
1977	1,289,451	1,474,342	1,474,342	1.1434
1978	1,675,306	830,937	830,937	0.4960
1979	2,243,976	1,538,716	1,538,716	0.6857
1980	2,926,431	290,077	290,077	0.0991
1981	3,550,484	11,476	11,476	0.0032
1982	4,048,065	3,290,366	3,290,366	0.8128
1983	4,470,863	1,108,809	1,108,809	0.2480
1984	4,965,307	0	0	0.0000
1985	5,559,537	6,335,511	4,290,706	0.7718
1986	6,150,751	2,294,718	2,294,718	0.3731
1987	6,744,268	2,165,619	2,165,619	0.3211
1988	7,290,766	13,370,590	8,101,912	1.1113
1989	7,930,268	14,188,005	12,108,054	1.5268
1990	8,690,024	8,268,048	8,268,048	0.9514
1991	9,350,690	1,124,694	1,124,694	0.1203
1992	10,000,000	13,875,070	10,838,981	1.0839
			MEAN :	.5312
			STANDARD DEVIATION :	.0884

CAPPED CATASTROPHE LOSSES: Individual catastrophes are limited to a value per amount of insurance years equal to the 95 percentile of all of catastrophes companywide. This value is approximately \$ 0.60 per amount of insurance years. The "Capped Cats. per AIY" are the sum of the individual capped catastrophes per AIY for the year.

EXHIBIT B

COMPANYWIDE TOTAL HOMEOWNERS
HURRICANE LOSSES PER AMOUNT OF INSURANCE YEARS

YEAR	$ HURRICANE LOSSES	RESTATED IN 1992 DOLLARS AND ADJUSTED TO 100 YEAR FREQ.	HURR LOSSES PER AIY	YEAR	$ HURRICANE LOSSES	RESTATED IN 1992 DOLLARS AND ADJUSTED TO 100 YEAR FREQ.	HURR LOSSES PER AIY
1959	$ 1,074	$ 251,307	0.0044	1979	$ 9,164,211	29,488,214	0.5141
1960	31,962	6,059,372	0.1056	1980	1,071,383	747,094	0.0130
1961	36,663	13,991,076	0.2439	1981	0	0	0.0000
1962	0	0	0.0000	1982	0	0	0.0000
1963	0	0	0.0000	1983	15,133,869	69,443,755	1.2107
1964	364,484	6,981,475	0.1217	1984	336,464	3,080,196	0.0537
1965	616,757	47,907,394	0.8353	1985	14,848,026	25,854,900	0.4508
1966	36,578	3,576,209	0.0624	1986	557,906	757,691	0.0132
1967	36,503	539,368	0.0094	1987	25,384	152,356	0.0027
1968	41,105	4,496,935	0.0784	1988	800,181	3,780,349	0.0659
1969	423,705	4,044,604	0.0705	1989	43,079,677	37,185,730	0.6483
1970	862,034	7,596,233	0.1324	1990	0	0	0.0000
1971	82,927	4,122,242	0.0719	1991	903,181	540,505	0.0094
1972	44,730	1,349,310	0.0235	1992	348,416,087	236,922,939	4.1307
1973	6,511	182,748	0.0032				
1974	97,688	386,854	0.0067				
1975	310,365	2,697,786	0.0470				
1976	142,475	774,550	0.0135				
1977	0	0	0.0000				
1978	0	0	0.0000				
				TOTAL	437,471,930	512,911,195	

MEAN ANNUAL $ HURRICANE/AIY : 0.2630
STANDARD DEVIATION OF MEAN $ HURRICANE/AIY : 0.1263

Notes : (1) Losses are restated to 1992 dollars by inflating actual incurred losses to 1992 exposure levels using 1992 amounts of insurance years for the affected state.

(2) Hurricane losses are expressed as a dollar per amount of insurance years for ALL coastal states in column (3). For 1992, coastal states' AIY was $ 57,355,992.

EXHIBIT C
HURRICANE PROVISION
ALLOCATION FACTORS
(BASED ON 1992 AMOUNTS OF INSURANCE YEARS)

	STATEWIDE		COUNTIES W/IN 100 MILES		STATE
STATES	AMT. INS. YRS.	PERCENT	AMT. INS. YRS.	PERCENT	FACTOR
State A	2,091,607	8.5	410,839	2.7	5.6
State B	9,305,906	37.8	9,305,906	61.2	49.5
State C	2,298,054	9.3	1,853,171	12.2	10.8
State D	942,000	3.8	381,863	2.5	3.2
State E	10,000,000	40.6	3,241,651	21.3	31.0
GULF COAST	24,637,567	100.0	15,193,430	100.0	100.0
State A	3,974,992	47.3	390,901	18.5	32.9
State B	2,451,718	29.2	556,483	26.3	27.7
State C	1,974,222	23.5	1,170,092	55.3	39.4
Mid Atlantic	8,400,932	100.0	2,117,476	100.0	100.0
State A	116,024	0.5	116,024	0.7	0.6
State B	535,126	2.2	535,126	3.0	2.6
State C	28,943	1.2	28,943	0.2	0.7
State D	279,725	1.2	279,725	1.6	1.4
State E	3,688,197	15.2	3,688,197	20.9	18.0
State F	52,271	0.2	52,271	0.3	0.3
State G	278,499	1.1	278,499	1.6	1.4
State H	3,909,665	16.1	3,909,665	22.1	19.1
State I	5,663,152	23.3	3,642,986	20.6	22.0
State K	5,414,252	22.3	3,007,025	17.0	19.7
State L	2,092	0.0	2,092	0.0	0.0
State M	4,089,055	16.8	2,110,904	12.0	14.4
North Atlantic	24,317,493	100.0	17,651,457	100.0	100.0

GROUP	(1) MEDIAN ANNUAL SEVERITY (FOR YRS W/ OCC.)	(2) NO. YRS. WITH OCCURRENCE (DIVIDED ALL YRS.)	(3) MEDIAN ANNUAL LOSS (1) X (2)	(4) GROUP FACTOR
GROUP 1	3,778,790	.676	2,556,240	91.0
GROUP 2	193,051	.382	73,814	2.6
GROUP 3	506,069	.353	178,613	6.4
SUM OF GROUPS	-	-	2,808,667	100.0

EXHIBIT D
COMPANYWIDE HOMEOWNERS
ADJUSTMENT TO 100 YEAR FREQUENCIES
BY LANDFALL AND WINDSPEED

(1) HURRICANE	(2) INTENSITY	(3) LANDFALL	(4) EXPECTED NUMBER OF OCCURRENCES PER 100 YEARS	(5) ACTUAL NUMBER OF OCCURRENCES	(6) NUMBER OF YEARS IN SAMPLE	(7) ADJUSTMENT FOR EXPECTED FREQUENCY ((4)x(6))/((5)x100)
GRACIE	2	12	1.6	1	34	0.544
DONNA	3	8	0.8	1	34	0.272
CARLA	3	2	2.0	1	34	0.680
CLEO	1	15	0.4	3	34	0.045
DORA	1	11	0.8	1	34	0.272
HILDA	2	3	2.0	2	34	0.340
BETSY	2	9	3.3	1	34	1.122
ALMA	1	6	14.8	3	34	1.677
BEULAH	2	1	1.2	3	34	0.136
GLADYS	1	7	9.4	1	34	3.196
CAMILLE	4	4	1.2	1	34	0.408
CELIA	2	1	1.2	3	34	0.136
DORIA	1	14	10.2	1	34	3.468
FERN	1	2	13.9	6	34	0.788
EDITH	1	3	9.8	2	34	1.666
GINGER	1	15	0.4	3	34	0.045
AGNES	1	6	14.8	3	34	1.677
DELIA	1	2	13.9	6	34	0.788
CARMEN	2	3	2.0	2	34	0.340
ELOISE	2	6	2.9	1	34	0.986
BELLE	1	17	3.3	2	34	0.561
DAVID	1	10	5.7	1	34	1.938
FREDERICK	2	5	2.5	1	34	0.850
DANIELLE	1	2	13.9	6	34	0.788
ALLEN	2	1	1.2	3	34	0.136
ALICIA	2	2	4.9	1	34	1.666
DIANA	1	13	8.6	1	34	2.924
DANNY	1	3	9.8	2	34	1.666
ELENA	2	4	2.9	1	34	0.986
GLORIA	2	17	1.6	1	34	0.544
JUAN	1	4	9.4	2	34	1.598
KATE	1	6	14.8	3	34	1.677
BONNIE	1	2	13.9	6	34	0.788
CHARLIE	1	15	0.4	3	34	0.045
FLOYD	1	9	9.8	1	34	3.332
FLORENCE	1	4	9.4	2	34	1.598
GILBERT	1	1	13.5	1	34	4.590
KEITH	1	8	6.1	1	34	2.074
CHANTEL	1	2	13.9	6	34	0.788
HUGO	3	12	1.6	1	34	0.544
JERRY	1	2	13.9	6	34	0.788
BOB	1	17	3.3	2	34	0.561
ANDREW	4	9	2.0	1	34	0.680

EXHIBIT D

REGRESSION ANALYSIS OF COMPANYWIDE HOMEOWNERS NON-TENANTS CATASTROPHES (Excluding Hurricanes)
(VERSUS HOMEOWNERS)

Year	COMPANYWIDE HO NT Cat./AIY (Ys)	COMPANYWIDE HO Cat./AIY (Xs)	Fitted Ys
1982	.6003	.5357	.5625
1983	.7192	.6157	.6465
1984	.5310	.4984	.5233
1985	.3994	.3897	.4092
1986	.3175	.3064	.3217
1987	.2532	.2632	.2764
1988	.2878	.2846	.2988
1989	.6885	.6837	.7179
1990	.6049	.5911	.6207
1991	.8673	.8460	.8883
1992	.7764	.7348	.7715

Beta = 1.0532

Selected Beta = 1.0500

REGRESSION ANALYSIS OF COMPANYWIDE HOMEOWNERS NON-TENANTS HURRICANES
(VERSUS HOMEOWNERS)

Year	COMPANYWIDE HO NT Cat./AIY (Ys)	COMPANYWIDE HO Cat./AIY (Xs)	Fitted Ys
1982	.0000	.0000	.0000
1983	.7048	.6840	.7045
1984	.0140	.0138	.0142
1985	.5593	.5427	.5590
1986	.0190	.0184	.0190
1987	.0001	.0008	.0008
1988	.0218	.0218	.0225
1989	1.0677	1.0500	1.0815
1990	.0000	.0000	.0000
1991	.0178	.0173	.0178
1992	6.2420	6.0746	6.2568

Beta = 1.0273

Selected Beta = 1.0300

EXHIBIT E

COMPANYWIDE
CATASTROPHE DATA

HOMEOWNERS NON-TENANTS

Year	Amount of Insurance Years	Catastrophe Dollars	Cats. per AIY
1982	52,910,118	31,761,205	.6003
1983	57,476,105	41,336,099	.7192
1984	62,174,203	33,016,123	.5310
1985	69,431,972	27,734,150	.3994
1986	76,093,145	24,158,695	.3175
1987	82,375,106	20,856,152	.2532
1988	89,485,905	25,751,541	.2878
1989	98,504,244	67,817,978	.6885
1990	109,809,813	66,423,478	.6049
1991	121,095,090	105,027,287	.8673
1992	129,645,336	100,658,037	.7764

HOMEOWNERS

Year	Amount of Insurance Years	Catastrophe Dollars	Cats. per AIY
1982	56,654,832	30,351,916	.5357
1983	60,171,133	37,044,601	.6157
1984	65,228,629	32,509,856	.4984
1985	72,269,295	28,161,825	.3897
1986	98,562,340	24,073,085	.3064
1987	84,764,074	22,312,657	.2632
1988	92,476,033	26,314,618	.2846
1989	101,967,473	69,718,212	.6837
1990	113,658,525	67,185,314	.5911
1991	125,407,830	106,096,435	.8460
1992	137,527,630	101,061,066	.7348

EXHIBIT F

COMPANYWIDE
HURRICANE CATASTROPHE DATA

HOMEOWNERS NON-TENANTS

Year	Amount of Insurance Years	Catastrophe Dollars	Cats. per AIY
1982	19,141,999	0	.0000
1983	21,145,815	14,902,765	.7048
1984	23,307,499	327,288	.0140
1985	26,235,432	14,674,415	.5593
1986	29,244,317	555,651	.0190
1987	32,086,188	2,418	.0001
1988	35,376,309	770,184	.0218
1989	39,564,257	42,244,547	1.0677
1990	44,967,088	0	.0000
1991	50,201,631	893,765	.0178
1992	54,304,549	338,971,394	6.2420

HOMEOWNERS

Year	Amount of Insurance Years	Catastrophe Dollars	Cats. per AIY
1982	20,066,023	0	.0000
1983	22,124,239	15,133,869	.6840
1984	24,432,913	336,464	.0138
1985	27,356,272	14,847,200	.5427
1986	30,263,908	557,906	.0184
1987	33,165,855	25,384	.0008
1988	36,623,453	800,181	.0218
1989	41,029,306	43,079,677	1.0500
1990	46,671,345	0	.0000
1991	52,089,526	903,181	.0173
1992	57,355,992	348,416,087	6.0746

EXHIBIT C
STATE E HURRICANE DATA BY LANDFALL
HOMEOWNERS

LANDFALL 1

FREQUENCY

INTENSITY OF STORM

Hurricane Zone	I	II	III	IV
A	13.5	1.2	2.0	1.2
B	13.5	1.2	2.0	1.2
C	13.5	1.2	2.0	1.2
D	13.5	1.2	2.0	1.2

SIMULATED SEVERITY PER AIY

INTENSITY OF STORM

Hurricane Zone	I	II	III	IV
A	0.25860	0.67276	1.50701	3.34302
B	0.10727	0.36901	0.97334	2.32703
C	0.00420	0.33990	0.13306	0.46833
D	0.00000	0.00000	0.00000	0.00006

EXPECTED PURE PREMIUM PER AIY

INTENSITY OF STORM

Hurricane Zone	I	II	III	IV
A	3.49107	0.80731	3.01403	4.01163
B	1.44812	0.44281	1.94668	2.79243
C	0.05668	0.04078	0.26611	0.56199
D	0.00000	0.00000	0.00000	0.00007

EXHIBIT G
STATE E HURRICANE DATA BY LANDFALL (cont.)
HOMEOWNERS

LANDFALL 2

FREQUENCY

INTENSITY OF STORM

Hurricane Zone	I	II	III	IV
A	13.9	4.9	2.0	1.2
B	13.9	4.9	2.0	1.2
C	13.9	4.9	2.0	1.2
D	13.9	4.9	2.0	1.2

SIMULATED SEVERITY PER AIY

INTENSITY OF STORM

Hurricane Zone	I	II	III	IV
A	1.11297	3.09687	7.19391	16.02628
B	0.72280	2.12404	4.97476	11.52315
C	0.03258	0.14464	0.46500	1.29927
D	0.00001	0.00069	0.01141	0.11784

EXPECTED PURE PREMIUM PER AIY

INTENSITY OF STORM

Hurricane Zone	I	II	III	IV
A	15.02503	15.17466	14.38782	19.23153
B	9.75778	10.40780	9.94952	13.82778
C	0.43980	0.70874	0.93001	1.55912
D	0.00008	0.00338	0.02281	0.14141

EXHIBIT G
STATE E HURRICANE DATA BY LANDFALL (cont.)
HOMEOWNERS

LANDFALL 3

FREQUENCY

INTENSITY OF STORM

Hurricane Zone	I	II	III	IV
A	9.8	2.0	0.4	0.8
B	9.8	2.0	0.4	0.8
C	9.8	2.0	0.4	0.8
D	9.8	2.0	0.4	0.8

SIMULATED SEVERITY PER AIY

INTENSITY OF STORM

Hurricane Zone	I	II	III	IV
A	0.06139	0.15307	0.34147	0.70564
B	0.23859	0.59207	1.34487	2.82742
C	0.00361	0.01251	0.03576	0.08672
D	0.00003	0.00061	0.00350	0.01375

EXPECTED PURE PREMIUM PER AIY

INTENSITY OF STORM

Hurricane Zone	I	II	III	IV
A	0.60158	0.30614	0.13659	0.56451
B	2.33815	1.18414	0.53795	2.26194
C	0.03541	0.02502	0.01430	0.06938
D	0.00033	0.00123	0.00140	0.01100

EXHIBIT C
STATE E HURRICANE DATA BY LANDFALL (cont.)
HOMEOWNERS

ALL LANDFALLS

EXPECTED PURE PREMIUM PER AIY FOR ALL LANDFALLS

INTENSITY OF STORM

Hurricane Zone	I	II	III	IV	TOTAL
A	19.11768	16.28811	17.53844	23.80767	76.75190
B	13.54406	12.03476	12.43415	18.88215	56.89511
C	0.53189	0.77454	1.21042	2.19050	4.70735
D	0.00041	0.00461	0.02422	0.15248	0.18172
TOTAL					23.02758

HURRICANE CATASTROPHE PROVISION BY HURRICANE ZONE
HOMEOWNERS
HURRICANE ZONE

	A	B	C	D	Statewide
AIY	2,535	393	2,663	4,408	10,000
Pure Premium/AIY	76.75	56.90	4.71	0.18	23.03
Relativities					
Indicated	3.3326	2.4707	0.2045	0.0078	1.0000
Selected	3.3300	2.4710	0.2040	0.0080	1.0000
$ Cat/AIY	2.3044	1.7099	0.1412	0.0055	0.6920

HURRICANE CATASTROPHE PROVISION BY HURRICANE ZONE
NON-TENANT
HURRICANE ZONE

	A	B	C	D	Statewide
Homeowners	2.3044	1.7099	0.1412	0.0055	0.6920
BETA	1.0300	1.0300	1.0300	1.0300	1.0300
Non-Tenant	2.3736	1.7613	0.1454	0.0057	0.7128

APPENDIX C

EXAMPLE ADJUSTMENT TO FREQUENCY FOR 100 YEAR OCCURRENCE

(1) HURRICANE	(2) INTENSITY	(3) LANDFALL	(4) EXPECTED NUMBER OF OCCURRENCES PER 100 YEARS	(5) ACTUAL NUMBER OF OCCURRENCES*	(6) NUMBER OF YEARS IN SAMPLE	(7) ADJUSTMENT FOR EXPECTED FREQUENCY ((4)x(6))/((5)x100)
CARLA	3	2	2.0	1	34	0.680

* Actual number of occurrences equals the number of occurrences at the same landfall with the same intensity.

EXAMPLE CALCULATION OF LOSSES RESTATED IN 1992 DOLLARS AND ADJUSTED TO 100 YEAR FREQUENCY FOR HURRICANE CARLA (1961)

(1) STATE	(2) ACTUAL LOSS INCURRED	(3) 1961 AMOUNT OF INSURANCE YEARS	(4) 1992 AMOUNT OF INSURANCE YEARS	(5) ADJUSTMENT FOR EXPECTED FREQUENCY	(6) RESTATED INCURRED LOSS**
A	$ 17.16	17,445	2,091,607	0.680	$ 1,399
C	388.47	7,748	2,298,054	0.680	78,350
E	36,257.42	17,723	10,000,000	0.680	13,911,327
TOTAL	$36,663.05				$13,991,076

**Restated Incurred Loss equals Column(2) x Column(4) x Column(5)/Column(3)